

# CANADIAN GEOGRAPHICAL JOURNAL

AUGUST  
1939

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# The Canadian Geographical Society

OTTAWA, CANADA

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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geographical—historical, physical and economic—first of Canada, then of the British Empire and of the other parts of the world in which Canada has special interest. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated and educational to the young, as well as informative to the adult.

The Canadian Geographical Journal will be sent to each member of the Society in good standing. Membership in the Society is open to any one interested in geographical matters. The annual fee for membership is three dollars in Canada.

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# CANADIAN GEOGRAPHICAL JOURNAL

*Editor*

*Gordon M. Dallyn*

172 WELLINGTON STREET, OTTAWA

This magazine is dedicated to the interpretation, in authentic and popular form, extensive illustration of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

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The British standard of spelling is adopted substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1936.

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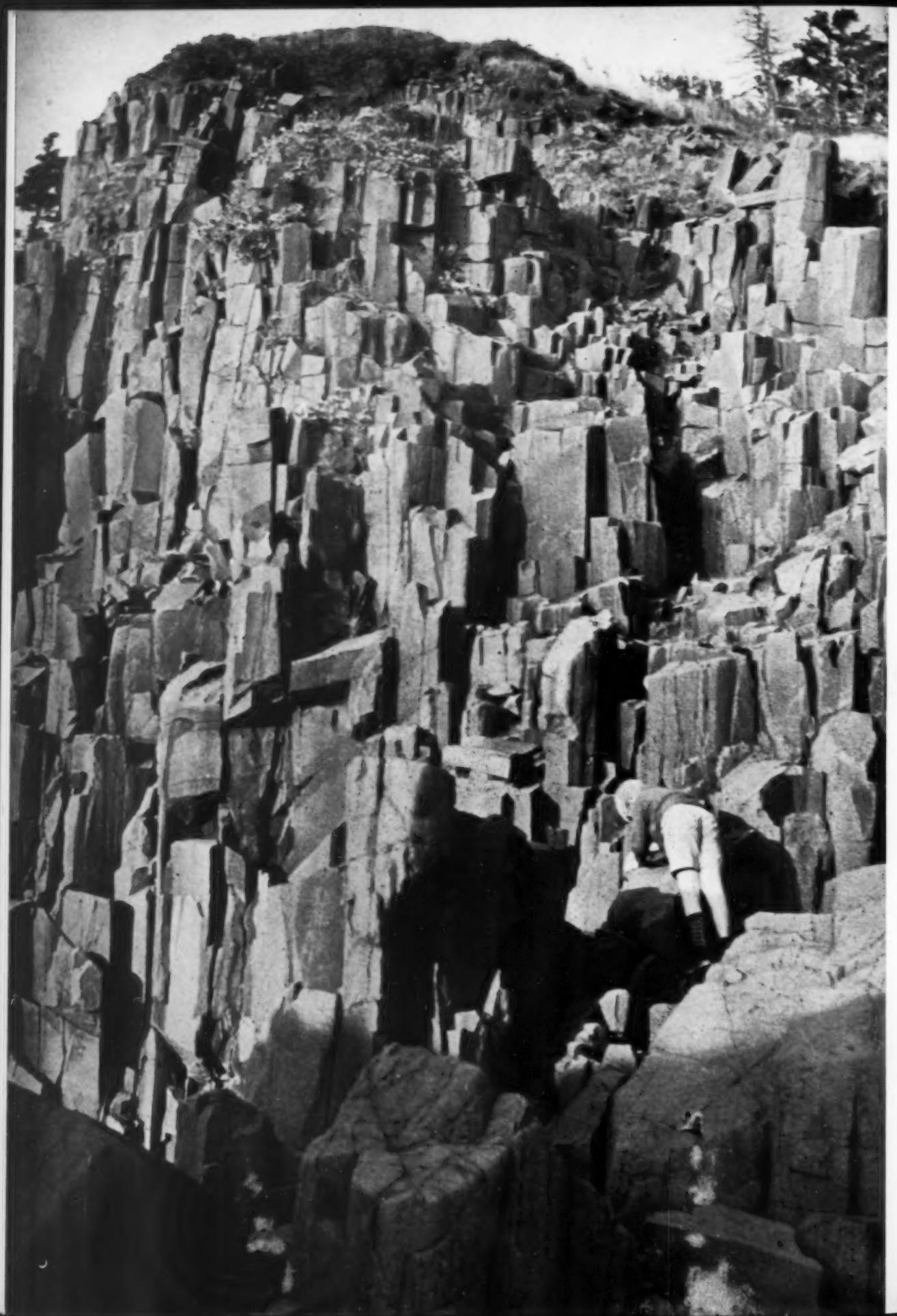
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## GRAND MANAN, FUNDY'S ISLE OF CHARM

by PHILIP C. CURTIS

THE boat for Grand Manan leaves Eastport three times a week at approximately two p.m. but tide and freight play havoc with the schedule. However, in spite of the customary wait, as soon as you are fairly off in the Grand Manan II, a comfortable Diesel motor ship, impatience fades away before the pleasure of the passage. A stop at Campobello Island, summer home of the Roosevelts, affords an interesting interlude where the sight of the Canadian customs officer on the dock brings home the fact that you have left the United States, for both Campobello and Grand Manan belong to the Province of New Brunswick.

Approximately six miles east of West Quoddy Head, the easternmost point of the United States, at the entrance to the Bay of Fundy, and some ten or twelve-mile sail from Eastport, lies Grand Manan, an unspoiled island paradise, a vacation retreat that one would go far to equal. Its magnificent scenic beauty, the stupendous cliffs that rise almost unbroken along the entire western side, its rugged and beautiful eastern shore make the nature lover catch his breath in delight and wonder.

After two or three hours' sail, depending on whether the tide allows the captain to take the more direct route through the Lubec Narrows (where the swirling tide rushes madly through a channel scarcely two hundred feet wide) or sends him on the longer route around the northern end of Campobello, you approach Northern Head awed by a magnificent view down the sheer cliffs that form the western side of the island. Warmed after the chilly sail by the soft spruce-scented breeze from the island, you pass Fish Head so very like the evergreen coast of Maine and soon round Swallow Tail Point with its red-topped lighthouse, while the cheery clang of its fog bell salutes you bidding you a welcome to the island from its hospitable people. Your boat is soon tied up at the dock in the harbour of North Head, the main village on the island, and you probably climb up the gang-plank from the upper deck as Grand Manan's twenty-two foot



Whale Cove weir in the fog.

tide leaves the tall sides of the vessel far under the towering top of the wharf. Here you find the main Post Office, the bank, customs office, the "Superior School" which includes two high school grades, and the theatre.

Grand Manan is the largest of a group of islands, the many smaller ones being scattered among the dangerous rocks and shoals of its eastern side, Ross, Cheney, Whitehead, Long Island, High Duck, Low Duck, Big and Little Wood Island being the larger ones. To the south-east lies Kent Island, where Bowdoin College maintains a scientific station to which the students come in summer to study bird life, tidal currents, short wave radio, and magnetic disturbances.

Grand Manan takes its name from the Indian word for island, *Mun-aa-nook*; Champlain, who visited the island in 1606, added the descriptive prefix "Grande". Although he used the word to describe the island's size, it fits even more aptly our colloquialism so descriptive of its magnificent scenery.

As the crow flies, the island is 15.3 miles long from north to south and 6.7 miles wide at its central widest point. A good gravel auto road winds down its eastern seaboard, connecting its five quaint fishing villages and making a twenty-mile drive from Long Eddy Fog Whistle to Southern Head. Here Southwest Head Light, atop

Left:—Perpendicular columns of basaltic rock at Southern Head rival those of the Island of Staffa off the coast of Scotland.

# GRAND MANAN

THE HEAVY OUTLINE REPRESENTS THE AVERAGE HIGH TIDE LEVEL; THE LIGHTER AND OUTER LINE REPRESENTS THE LOW TIDE LEVEL. THE STIPPLED AREAS ARE THEREFORE DRY AT LOW TIDE.

SCALE IN STATUTE MILES (1 M. = 2200 FT.)

THE GREATEST LENGTH OF THE ISLAND IS 15.5 STATUTE MILES. THE GREATEST WIDTH (AT RIGHT ANGLES TO THE LENGTH) IS 6.70 STATUTE MILES.

THE MILEAGE PRINTED ALONG THE ARROWS PERTAINS TO THE DISTANCE BETWEEN CROSSSES (S) ON THE SIDE OF THE ROAD WHICH THE MILEAGE IS PRINTED, WHETHER SIDEWAYS OR UP AND DOWN THE ROAD, AND NOT THE LENGTH OF THE ROAD.

THE OCEAN DEPTHS ARE IN FEET, AT APPROXIMATE AVERAGE LEVEL OF LOWEST LOW TIDE.

THE FORMATIONS TO THE LEFT OF THE BROKEN LINE, INCLUDING ALL THE SMALL ISLANDS, ARE COMPOSED OF VOLCANICS, OF THE TRIASSIC PERIOD, 180,000,000 TO 185,000,000 YEARS OLD.

OF THE PALEOZOIC AND PRECAMBRIAN ERAS, 360,000,000 TO 1,500,000,000 YEARS OLD.

THE NUMEROUS CIRCLES ALONG THE SHORES INDICATE WEIRS, THE NAMES OF WHICH ARE GIVEN ON THE BACK OF THIS SHEET.

BRITISH ADMIRALTY CHART 2239 (SURVEY OF 1882), U.S. HYDROGRAPHIC CHART 1057 (SURVEY OF 1880), AND CANADIAN GEOLOGICAL SURVEY MAP 257A (ISSUED IN 1931) WITH THE ADDITION OF MANY IMPORTANT FEATURES THAT HAVE NEVER BEFORE APPEARED ON ANY MAP.

## GRAND MANAN HISTORICAL SOCIETY

ABBREVIATIONS: G. GRAVEL; H. HEDG.; R. ROCK; S. SAND; S. SHELLS; ST. STONES.

ANNA BUCHANAN CHARLES  
MEMORIAL PUBLICATION

1939

LONGITUDE  
60° 45' WEST

THE ELEVATIONS REFER TO HEIGHTS OF THE  
LAND ABOVE AVERAGE HIGHEST HIGH TIDE.

### RISE OF TIDES

	HIGH TIDE	LOWEST HIGH TIDE
NORTH HEAD	28 ft.	19 ft.
GRAND HARBOUR	30	17 1/2
SEAL COVE	19	18 1/2
(FROM 1939 TIDE TABLE ISSUED BY CANADIAN HYDROGRAPHIC SERVICE)		

### TIDE CURRENTS

ALONG WEST COAST ABOUT 3 KNOTS MAXIMUM  
EAST COAST (OUTER ISLAND AND BAY) 2 TO 3  
BETWEEN NORTH HEAD ID. AND GULF PROPECTORA  
ABOUT 2 MILES E. OF OUTER DIAMOND 4 TO 6 1/2  
AT GARNET ROCK (3 1/2 MILES S. OF KENT ID.) 2 TO 4  
[1 KNOT = 60 FEET OF DISTANCE IN 1 MINUTE OF TIME  
FLOOD CURRENT RUNS NORTHWARD; EBB CURRENT SOUTHWARD]



MAP OF BAY OF FUNDY

GRAND MANAN ISLAND

GRANDE ISLE

## GRAND MANAN, FUNDY'S ISLE OF CHARM

its 170-foot cliff, warns approaching vessels of dangerous waters and guides them safely away from the reef-studded eastern side of the island, up the deep safe Grand Manan Channel to the west and on to St. John, New Brunswick, and points in northern Bay of Fundy.

The view at Southern Head with its lighthouse is one of the most popular on the island. A path follows the cliff-edge through fields of waving grass and dense patches of yellow shrubby cinquefoil, then for several miles through alder thickets and spruce woods where the trees, leaning rakishly away from the cliff, bear witness to the strength and frequency of the westerly winds. In places the cliffs at Southern Head are perfect columns of basaltic rock, so regular and perpendicular that they seem to have been quarried out by man and are said to rival those of the Island of Staffa off the Scottish coast.

The first written mention of the island is found in Champlain's account of his voyages. He came in 1606, seeking shelter from a storm and anchored near the southern end of the island, but his anchor cable parted during the gale. Many years later, in 1842, an anchor obviously of old design and with the rust of many years in the water was brought up by a fisherman at Deep Cove.

Until the American Revolution, the island was inhabited only by Indians but in 1779 three Loyalists, Joel Bonny, Abiel and James Sprague, finding conditions at Machias unbearable, made an unsuccessful attempt at settlement and lived on the island about a year. During that time Alexander Bonny was born, the first white child on the island. A stream near where the family lived is still called "Bonny's Brook". A permanent settlement was begun in May, 1784, under a license granted by the Province of Nova Scotia to fifty families, all prominent Loyalists. Most of them did not remain, but Moses Gerrish and Thomas Ross stayed, and, with other Loyalists from New Brunswick, founded a permanent colony which has grown in an almost pure strain to the present total of 2,500 inhabitants.

The abundant forests and the possibility of ship-building attracted some of the early settlers, as it did Charles Wilcox

in 1826. He brought his family and household goods in an open boat from Minas Basin, Nova Scotia, and after two days of rough sailing reached Deep Cove where he settled next to his brother-in-law, who had persuaded him to come. It was a hard life and often discouraging, but in spite of the hardships they raised four more children, making seven in all.

Wilcox with his three boys and their uncle whipsawed logs from the forest and built during the years that followed five large schooners, the *William Henry*, *Abigail*, *Eagle*, *Eliza*, *Venture*, and, in 1840, the *Exile*, a brigantine of 122 tons.

The *Exile* proved to be an unlucky vessel and the tales of her misfortunes are still told on the island. On her first voyage her mast and mainsail were lost; later she was nearly wrecked in the West Indies where she had to lay up for a year for repairs. In 1846 she left Pictou, Nova Scotia, for Weymouth, Massachusetts, with a load of coal. A terrible westerly gale, during which most of the cargo had to be thrown overboard, stove in her bulwarks, stripped her of canvas and most of her spars, and blew her half way across the ocean. With a jury rig, suffering from scarcity of provisions, they finally reached Ireland where the vessel was sold. The first mate, one of the Wilcox boys, met and married an Irish girl with whom he returned to Grand Manan to a life of farming and fishing, settling at Deep Cove where they raised a family of twelve children and lived to the ripe old ages of seventy-seven and ninety. Four of their children are still living on the island.

The western side of the island, running approximately north and south, consists of an almost unbroken line of cliffs with a sheer drop of 200 to 400 feet from their heavily wooded summits to the narrow pebbly beach at their feet, providing the island's most magnificent scenery. The land slopes off in rolling hills and dense spruce and fir forest, dotted with many lakes and ponds, to the eastern side where the five fishing villages lie nestled between the evergreen forest and the bold rocky shore. Several fine sandy beaches add variety and beauty to the ensemble.

As one drives down the island from North Head through Castalia, Woodwards



Waterfront at North Head, typical harbour scene.

Seining a weir for herring at Whale Cove.





Fish flakes at North Head Village; Grand Manan II at wharf.

Harpooner waiting for shark in Whale Cove weir.





Grand Manan's rugged western side, looking north up Grand Manan Channel from Southern Head.

Cove, Grand Harbour and Seal Cove, one sees on every hand the evidence of the principal industry of the inhabitants. There are fish flakes where cod, pollock and hake lie drying in the sun, a small shed housing a factory for trying out hake liver oil and countless smoke-houses scattered along the shore or huddled in congested groups at Woodwards Cove and Seal Cove. In the latter the herring catch, the most important of all the fisheries, is prepared for market. Every glimpse of the sea is sure to include one or more weirs (pronounced "wares" by the natives) where the herring are trapped and taken by the simple process of sweeping a seine around the inner circumference of the weir.

Watching the seining of a weir is one of the highlights of a vacation on the island. By "sounding a weir for fish" the natives ingeniously determine when there are enough herring to warrant the seining. A man, expert from long experience, is rowed around inside the weir, trailing over the stern of his dory a fine light line with a pollock jig for a sinker. Holding the line lightly between thumb and forefinger, he can feel every bump of a herring against the line and five bumps indicate a hogshead of fish. So expert do these men become that an error of over two per cent is most unusual.

The spectator at the seining is always impressed by the calm, placid good nature of the fishermen. The boat is usually so crowded with interested but curious on-

lookers that the long handle of the enormous dip net with which the fish are scooped, several hogsheads at a time, from the seine to the boat, has to be manoeuvred with extreme care to keep from sweeping a spectator overboard or at least jabbing one in the ribs. When one fisherman was asked if he minded having spectators so much in the way, he replied "If I don't bother you, you don't bother me." This attitude is typical of the friendly and courteous nature of the natives who are always ready to greet one on the road or to welcome a stranger into their homes for a call.

After being seined, the herring are taken to the fish-house wharf where they are bailed out of the hold of the boat with half-barrel buckets and hoisted with a primitive but effective rope hoist to a sluice-way on the dock. They are dumped into a hopper with a stream of salt water which serves to wash off most of the scales and at the same time float the fish down the sluice into the fish-house. Here they drop into large tanks and the scale laden wash-water flows away, leaving a pile of scales to be later collected and sold for use in making artificial pearls. During the last few years a cheaper foreign product has killed the market for these scales.

The herring are pickled in a highly concentrated salt brine for three days. Women then string them through the gills on sticks which are then hung on racks to drain outdoors for a few hours, after



Volcanic flow of amorphous trap lies exposed in alternate layers on the face of the cliff called The Seven Days Work.

which the racks are stacked under the roof of the smoke-house. Fires are built on the dirt floor, and with sawdust sprinkled on to make more smoke and temper the heat the fish are dried and smoked for three to four weeks, depending on the weather and the dryness necessitated by the demands of the market. For some trades the smoked fish are packed as they are, while for others they are filleted. This work is all done by women who can clean, skin, and fillet a herring while one is getting ready to ask how many they can do in an hour.

Sometimes a shark gets into a weir and must be killed instantly to avoid damage to the nets and poles making up the weir. It is a thrilling experience to participate in the excitement of harpooning a shark. The weir is surrounded by the dories of the fishermen keeping track of the location of the shark as it slowly swims round and round in the weir while inside a lone dory lies waiting for it to come within harpooning distance. In the bow stands the harpooner with his iron tipped with dynamite, poised ready for the kill. An electric wire attached to the explosive is held by a man in the stern who sits ready to set off the charge at the proper moment when the shark has gone a safe distance from the dory after being struck. An air of intense, hushed excitement prevails as the watchers in hoarse whispers tell of the location of the shark. Finally "here he comes right towards you" warns

the harpooner to be on the alert. A quick jab with the harpoon is followed by a wild swirl of water. Then a geyser twenty feet high with the shark in the middle shows the fishermen that another menace to their weir has been successfully removed. Amid shouts of pent-up excitement and relief, the other dories rush into the weir, a line is passed through the shark's gills, and it is towed to shore.

Dark Harbour, reached by a narrow wood road leading from Castalia some six miles across the island to the western shore, is a deep ravine or cleft in the cliffs, extending back from the beach about half-a-mile. The sea has thrown up a bar of large smooth stones, completely closing the entrance and forming a natural harbour of great beauty which is a perfect shelter for small craft. A breachway near the cliff on the northern side is kept open and allows small boats to enter two or three hours before and after high tide.

This sombre spot is uninhabited save for a few fishermen who eke out a lonely existence collecting dulse, a sea-weed rich in iodine and considered a delicacy by the people of the Maritime Provinces. (The dulse on the outer side of the bar is uncovered at extremely low tide, and twice a month can be pulled up and brought ashore to be dried and prepared for market.) The dulse grows out beyond the rockweed but not as far out as the kelp. During the low tides that occur around the new and the full moon it is sufficiently



## GRAND MANAN, FUNDY'S ISLE OF CHARM

uncovered to be collected in large quantities dried and prepared for the market. A space on the bar about sixty by one hundred feet is cleared of the larger and irregular stones, thus making a flat space as level and smooth as a well-paved street, where the dulse is spread out to dry in the sun. As it must be taken in at night, and in damp or rainy weather, each man has a small shanty or shed near his drying area in which it can be kept from moisture. When the weather permits the drying to be finished quickly, this dulse is considered superior to any in the Maritimes. A price of six cents a pound means a great deal of work for a small profit. Children are said to prefer dulse to candy but its bitter, salty tang and strong flavour of iodine rarely appeal to the uninitiated.

Starting at the lagoon at Dark Harbour and quickly rising more than three hundred feet to the top of the cliff, is one of the many fine trails on the island. The top of the cliff affords a spectacular view of the dusky beauty of the lagoon, crowded on both sides by towering heights, and of the deep blue of Grand Manan Channel to the shore of Maine and north towards New Brunswick. The trail continues winding up and down through dense forests of spruce and fir, with many old grey birches hoary and black with age and twisted into strange shapes by the westerly gales. In three or four miles the trail drops down to the beach at Money Cove. An island legend tells of the use of this spot as a hide-out by pirates and of treasure buried there. None has ever been found, however; the awesome cliffs and the inaccessible location have probably given rise to the story.

Another popular trail that makes an easy all-day hike starts at Whale Cove and rounds Northern Head (Ashburton Head) to the Long Eddy Whistle, though why called "whistle" is a mystery, for the deep boom of its horn fairly rocks the cliff above the building. Starting near the summer home of Willa Cather, the trail enters the woods and climbs for an outlook over Whale Cove to the top of a cliff known as The Seven Days' Work. Here (best seen from across the cove) on the face of the cliff there lies exposed a peculiar geological formation. The volcanic flow of amorphous trap and amygdaloid lies stratified in

alternate nearly horizontal layers that vary in thickness from ten to thirty feet and are plainly exposed for several hundred yards along the cliff. The trail then dips down a deep ravine to Eel Brook, where the Indians caught their slippery prey, up to Eel Brook Falls, an attractive mountain cataract deep in the woods, and out to the cliff edge again and over the top of Ashburton Head, its name commemorating one of the worst wrecks of the island's history.

On January 19, 1857, the *Lord Ashburton* a merchantman of one thousand tons from Toulon, France, to Saint John, New Brunswick, went ashore in a howling blizzard. Twenty-one were lost but eight reached the rocky shore only to be confronted by the practically unscalable three hundred and fifty foot cliff. By some miracle, perhaps aided by the terrific force of the wind which was blowing directly against the cliff, three reached the top and one, half-frozen, staggered to the nearest habitation where help was obtained.

Dark Harbour bar and breachway from top of cliff where the trail to the north comes to an outlook.

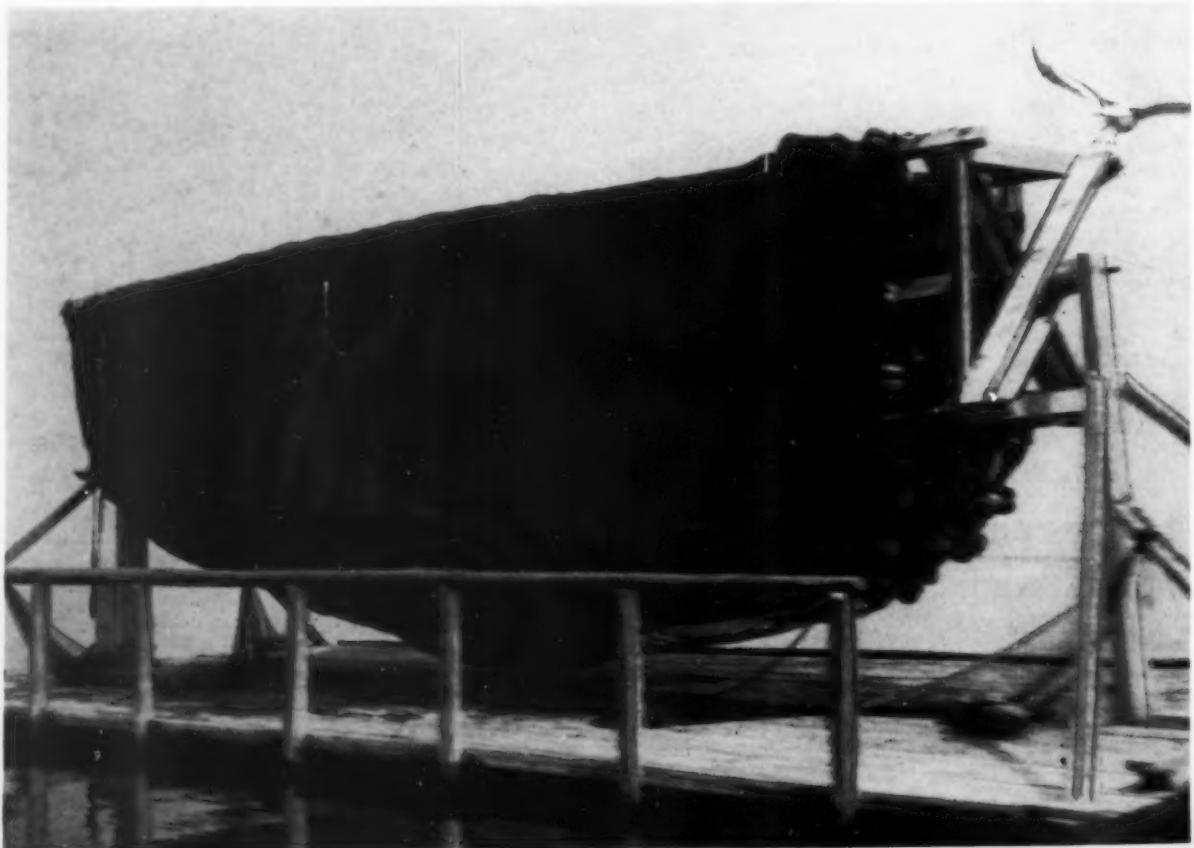


Left:—Fishing boats at wharf, fog bow.



Deep Cove, where Champlain was blown ashore in a gale in 1606.

Seine raft on which nets are dried and kept ready for use.





Herring draining on racks by a smoke-house while fisherman explains the process to summer visitors.

Swallow Tail Point and Lighthouse.





Windblow Tree on Kent Island, where Bowdoin College maintains a scientific station.

and the other survivors rescued. William Lawson, who was the one able to get aid, remained on the island and years later was buried in the graveyard of the Episcopal Church at North Head, beside the remains of the twenty-one victims of the disaster.

There are several fine sandy beaches where those who can endure the frigid water may go in swimming. There is also one warm salt water swimming-hole at Castalia that is very popular among both summer visitors and the native children. Here the incoming tide meanders for a quarter of a mile up the bed of a stream that has cut a crooked channel across a wide pebbly shore. Exposure to the warm rocks raises the temperature of the water to about seventy degrees and the small trickle of fresh water streams does not appreciably affect its salinity. One uses this swimming hole not at his own convenience but after consulting the tide tables.

Illustrative of the fine character of the natives is the fact that until recently they have never had any police on the island and only now at the insistence of the Dominion Government. Any minor infractions of the peace were satisfactorily dealt with by the older and respected men of the community. The presence of the lone "Mounty" was at first resented by the islanders but his tact and their good nature have combined to enable him to perform his duties to everybody's satisfaction. An old jail in North Head has never been used as such and recently at a town meeting was under discussion as to its fitness as a store house for the community fire hose and pump.

There is also a telephone exchange in a private house at Castalia that connects with the mainland and serves the main island and many of the farms on the outlying islands. Central's hours are from six a.m. to ten p.m., except on Sundays when the hours are from eight to nine a.m., one to two p.m., five to six p.m. and nine

to ten p.m. One is not supposed to call during the off hours except in case of emergency or after making arrangements in advance. Central is the source of general information and broadcasts important local news. One night last summer the writer showed some movies of the island's activities taken on previous visits. Central was told at noon to spread the news and invite everybody. The theatre at North Head that night was packed to the doors with no standing-room left.

When the tide is right and an extra low water (known as a "dreen" tide) comes about noon, the walk out to Whitehead across the thoroughfares separating the islands is an interesting and novel experience. Clad in old clothes and shoes that can take a wetting, one starts a little before low water from the point of land between Woodwards Cove and Grand Harbour. Crossing the thoroughfare to Ross Island is done quickly without even wetting the feet. It is a pleasant walk of about two miles past the farms and through the woods across Ross Island to the shore at Cheney's Passage where one crosses, still quite dry, to Cheney Island. During the short walk across Cheney, one passes a farmer working in his fields with his oxen, last remnant of the primitive methods of the islanders. The hiker is now confronted with Cow Passage, the longest stretch to cross, with pools of water here and there, and the fast-moving tide vividly brings back those schoolbook tales of people trapped by the furious Fundy tides. One hurries along, consoled by the thought that this is not Minas Basin with its forty-foot tide, and unmindful of wet feet, reaching Whitehead Island and safety. Along the road that skirts the shore through a considerable settlement composed of many families making their homes in the seclusion of this rocky outpost. The tramp is finished at the wharf in time to catch Archie as he is starting in his motor-

## GRAND MANAN, FUNDY'S ISLE OF CHARM

boat to Grand Manan to get the mail and one returns with him to the starting point.

One's stay would not be completed without a deep-sea fishing trip. It is easy to find a fisherman who will take a party in his speedy forty-foot motor-boat for a nominal fee. If the herring are running, and they usually are, a bucket of them serves for bait. After a run of an hour or so, out beyond Whitehead and Kent Islands, one reaches the fishing grounds timing the arrival so that there will be two hours of fishing on the slack water. When the tide is running full (four to six knots), it mills around the shoals in swirling eddies, making it practically impossible to get a forty fathom line to bottom even with its heavy sinker. Cod and pollock are usually plentiful, and a single herring proves an attractive bait. If the fish are not biting fast enough to suit the pilot, the lines are pulled up and the boat speeds further out to Diamond Shoals, two miles south of Whitehead. With the engines still going, forty to sixty fathoms of line are let out over the stern and trolled back and forth across the shoal. The pollock, chasing schools of herring over the shoals, are near the surface and the bare hook with its shiny sinker simulates to the satisfaction of the pollock a frightened herring. The pilot by watching the way the gulls act can tell exactly where the fish are and more often than not, when the lines trail through a school that he has spotted in that way, all of them may get strikes simultaneously and then the excitement begins in earnest. What a thrill with all tugging and hauling to get their fish in with the lines untangled! It is surprising how little tangling there is. Each twelve to fifteen-pound fish breaks water once or twice as he is slowly hauled alongside and with a final back-straining heave is landed thrashing in the cockpit.

Game is quite plentiful and in the fall during the thirty-day hunting season many deer are shot in the forest of the interior.

The license fee for the native is one dollar for which he receives a tag and permission to shoot one deer. If he gets one he may sell the hide for a dollar, provided it has the license tag attached to show that it was obtained legally, thus enabling him to get his license money back. Duck shooting is also good but at the first sound of a gun the ducks come back in thousands from the ponds of the interior to the haven of the bird sanctuary in Grand Harbour located near the beach between Red Head Point and Ox Head. Here the Dominion Government maintains a bird sanctuary of some hundred acres with a caretaker who does some banding of ducks, thus contributing to the study of their migratory habits. Here amid beautiful surroundings a large shallow fresh water pond lies separated by only a few rods of scattered spruce and fir from a fine beach of hard-packed sand over a mile in length. A leisurely stroll is rewarded with glimpses of the little blue heron and thousands of black ducks feeding at the edge of the reeds across the pond, while over on the beach flocks of sandpipers skip along the sand at the feet of the gentle surf as it breaks in a long silvery thread along the shore.

A more ambitious study of waterfowl is made at Kent Island by Dr. Gross and the Bowdoin boys. Here many thousands of herring gulls are banded every summer. Gulls banded here have been found as far away as Mexico. The constant roosting of the gulls and the strong winds give the spruces and firs of this outer island a peculiar flat-topped shape.

Finally one's holiday draws all too soon to its inevitable end, and one leaves the island reluctantly but fortified with pleasant memories of a busy but restful vacation, and as the boat rounds Swallow Tail the early rays of the sun kiss the cliffs and the lighthouse a fond good-bye while the clanging salute of the fog bell bids you a reluctant farewell and an invitation, sure to be accepted, to come again.

Duckling runs back to mother after being banded.





Caretaker's cabin at the bird sanctuary in Grand Harbour.

Swallow Tail Light looms up out of the fog along the Fish Head Trail.



Trailing yew covering the rocks makes a soft, fragrant couch on Swallow Tail Point.



Looking north from Sloop Cove trail along the western side of the island with its 300-foot cliffs.







Standard types of uniform—showing khaki shirt, and trousers, "forestry green" tie and sweater, windbreaker with badge, "slicker", and forage cap. N.F.P. Provincial Section, British Columbia.

Photo by Vancouver Sun.

## NATIONAL FORESTRY PROGRAM

by R. A. GIBSON

*Address before summer meeting of Woodlands Section, Canadian Pulp and Paper Association, Duchesnay, P. Q., August, 1939.*

*(Photos not otherwise credited, courtesy Dominion Forest Service.)*

FOUR thousand young men are in forestry camps this summer—working members of provincial and Dominion units from Cape Breton, Nova Scotia, to Vancouver Island, British Columbia. This is the National Forestry Program—a large-scale project to see what contribution work in the woods, combined with varied training, can make toward the solution of our youth problem, and to determine what real advantages in forest conservation will accrue from an effort of this kind. It is

not an innovation though it is only this year reaching a national scale. There have been smaller preliminary experiments which have proved very encouraging. The Dominion Forest Service in 1937 started training youths from Prince Edward Island at the Acadia Forest Experiment Station in New Brunswick. The results were so satisfactory that Nova Scotia and New Brunswick asked that classes be held at the same station in 1938 for young men from their respective provinces. The funds for this

Left:—"Canada looks to her forest future." N. F. P. Provincial Section, British Columbia.

Photo by Vancouver Sun.



Left:— Enrolees on arrival  
at camp. N.F.P. Valcartier  
Experiment Station,  
Quebec.



Right:—"All set to change". N.F.P.  
Valcartier Forest Experiment  
Station, Quebec.



Left:—Enrolees after uni-  
form issue. N.F.P. Val-  
cartier Forest Experiment  
Station, Quebec.

## NATIONAL FORESTRY PROGRAM

work were provided jointly by the Dominion Department of Labour and the provincial authorities. The Dominion Forest Service supervised the project and undertook the tuition, which was directed primarily towards the proper handling of farm woodlots.

British Columbia has had three or four years' experience in the successful conduct of forestry work under the youth training plan, and several of the other provinces adopted the scheme in 1938. There is therefore a good background on which to base expectations of success for the National Forestry Program, which is really the second stage of the plan.

The National Forestry Program very satisfactorily fits into the work of the Dominion Forest Service, which is concerned primarily with research and demonstration looking to the better management of Canadian forests. Under the organization of the Department of Mines and Resources, the Dominion Forest Service is being used more and more in a consulting capacity by other branches and departments of government. Forestry operations in the National Parks are one instance. National Forestry Program units are operating in the parks under the direction of the Forest Service. While the provinces own and control by far the greater part of the national forest estate, the Dominion is expected to take the lead in the investigative field.

The question of timber supplies is becoming more urgent, and constructive plans should be progressively devised for ensuring an adequate supply of raw materials for our forest industries in the future. It is truly a national responsibility to see that our forest heritage is left in a satisfactory condition for the generations which are to follow. The next forest crop will necessarily come from areas which were cut over or burned over in the early days, and which now bear second growth timber of future commercial value. The areas worked over in the past were naturally those close to the mills. The crop they will bear will be worth more on this account. Fortunately the title to over 90 per cent of these lands is still vested in the Crown, and the governments can direct the ways in which they shall be handled. The National Forestry Program can do a useful job by showing in a practical way the results of different kinds and intensities of treatment of such crops, and it can show, too, what is the best kind of stock to grow

with best results in each region, in these ways providing information which will be of value both to governments and to industry.

It has been often said that protection of our forests from fire is our first problem in Canada. This warning will bear repetition. Every one must realize that it is hopeless to plan for the management of woodlands on a scientific basis and to spend money to this end, so long as the whole investment is liable to be wiped out by fire. The first objective in Canadian forestry must be to make the forests an insurable resource.

For this reason the bulk of the work of the National Forestry Program camps will be to increase facilities for protection purposes. Roads and trails must be constructed, telephone lines and lookout towers erected, buildings for staff provided, and fireguards placed in strategic places. All these things are essential if our forest industries are to survive.

The rise of the tourist industry in Canada to a position of great importance has presented new problems in forest protection. The forests are a main attraction for tourists. We cannot now value our woodlands solely on the basis of the products they will produce. In many places their tourist value will be more important. Here again the accessibility of the forests will constitute an attraction to a greater number. At the same time it will create increased responsibility in the matter of protection which can be met only by educating every one as to the value of the forest to each and every citizen and visitor. Forest authorities in Canada today are unanimous in looking on the forests from the multiple-use standpoint. The multiple-use idea includes the protection of watersheds and of wild life and the preservation of the scenic and recreational attractions offered to our own people and our visitors. Here again the National

Right: — Entrance to Kananaskis Forest Experiment Station, Alberta.

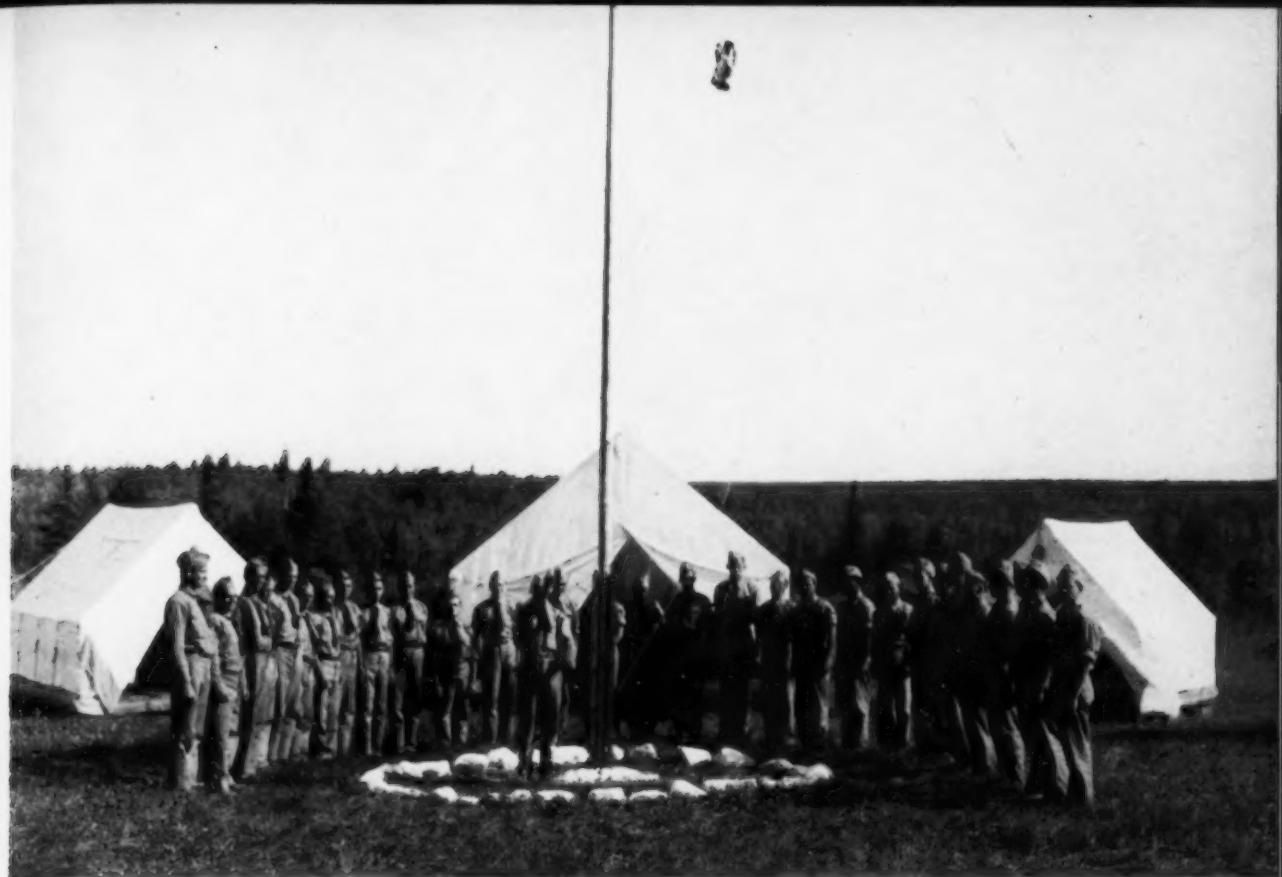




Road clearing. Kananaskis Forest Experiment Station, Alberta.

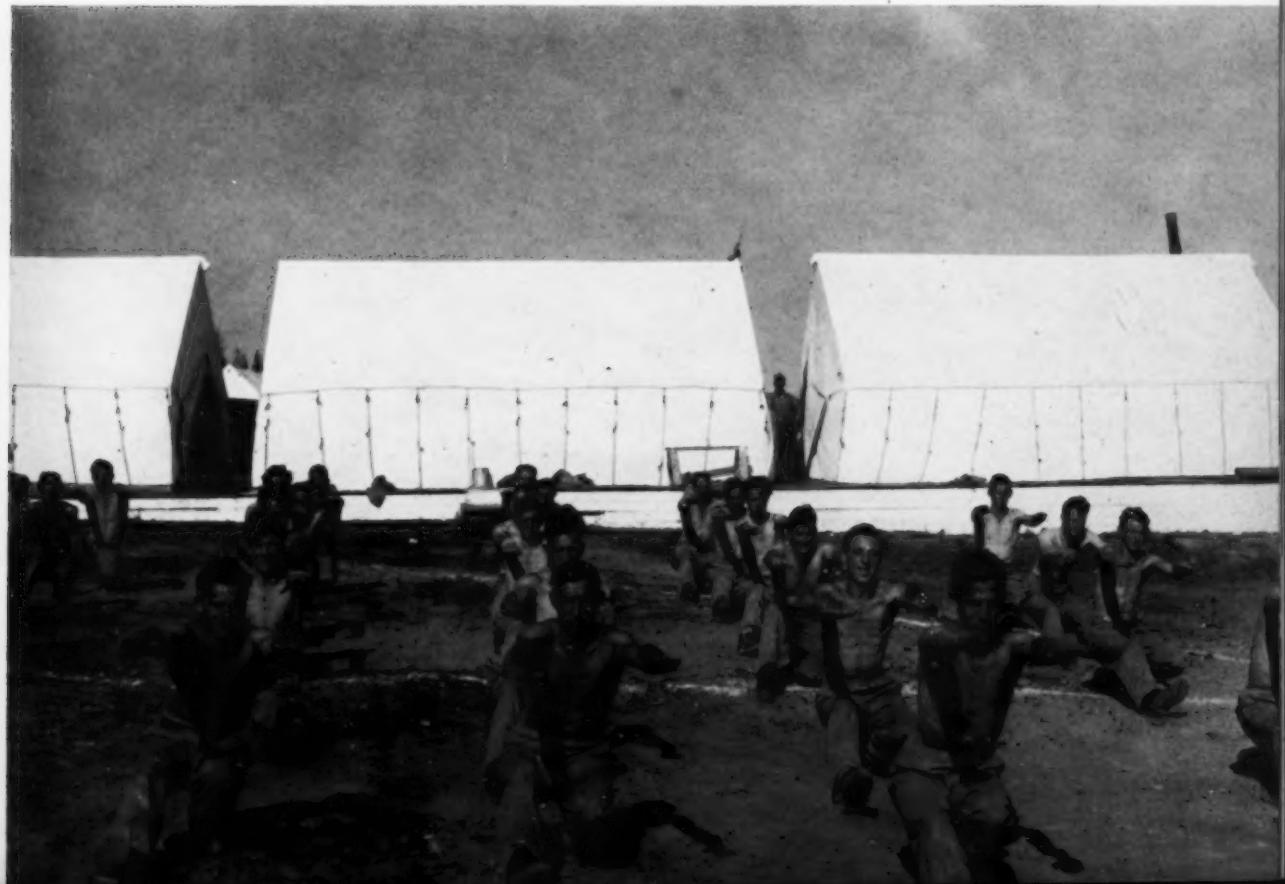
Practical instruction in forest surveying. N.F.P. Kananaskis Forest Experiment Station, Alberta.

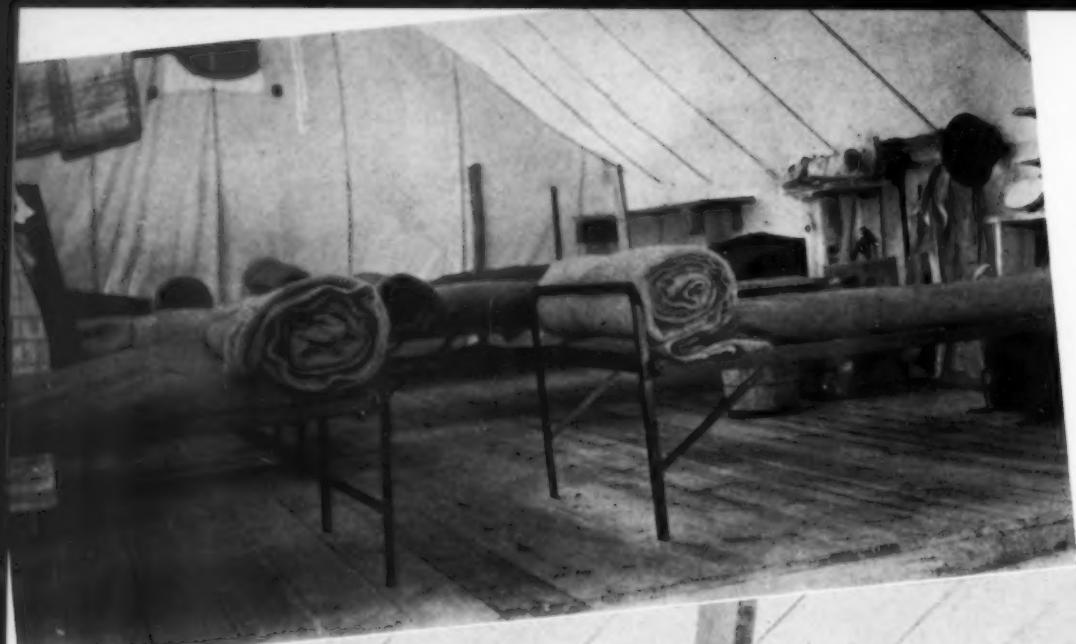




'Breaking the flag'. One minute silence is observed after tent inspection in the morning. Enrollees sing "O Canada" and fall in for physical training. N.F.P. Acadia Forest Experiment Station, New Brunswick.

N.F.P. class in physical training. Acadia Forest Experiment Station, New Brunswick.





Left: — Interior of sleep tent. N.F.P. Unit No. 8. Corry Lake, Petawawa Forest Experiment Station, Ontario.



Right:—"Filling up". N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.



Left:—A most important member of N.F.P. Units Nos. 8 & 10. Corry Lake, Petawawa Forest Experiment Station. Ontario.

Forestry Program will play an important part. Tourist camp-sites will be prepared where camp fires may be safely made and where tents can be pitched in attractive surroundings without damage or hazard to the trees.

The young men in these camps are being taught that all these things are part of a true forest conservation policy. To many people the words "forest conservation" convey an entirely erroneous meaning. They interpret them as implying only the preservation of natural conditions inviolate. This may have been the idea of sentimentalists in days gone by, but the term now means "wise use"—development of the resource for all purposes, guided by accurate knowledge. A well managed forest will fulfil all phases of multiple-use and yield better returns.

This conception of forest conservation is particularly important in Canada where our wood-using industries are organized and developed to export a large proportion of their products. These exports are a basic element in our world trade. They average around \$200,000,000 annually, and have in fact accounted for nearly a quarter of our total exports. We must do everything we can to protect and expand sources of supply of the raw materials of these industries. Unlike some of our other principal commodities our forest products are sold at prices determined solely by supply and demand in a highly competitive market. We in Canada can do little to influence these world prices, but we can improve quality and reduce production costs with the aid of research, introducing new methods both in our woodland operations and in our manufacturing processes.

Fortunately Canada has natural advantages in favourable growing conditions and convenient hydro-electric power sites. Using these as a basis we must build up a Canadian technique which will guarantee us our rightful position as one of the world's leading forest countries.

The funds provided by Dominion and provincial governments for work in the forests this year are much larger than those ordinarily available. This, coupled with the fact that a large number of young men are seeking employment, presents a



(1) Unit No. 7. N.F.P. Valcartier Forest Experiment Station, Quebec.

(2) "Men at work". N.F.P. Petawawa Forest Experiment Station. Photo by W. R. Grinnell, N.F.P.

(3) New road at Valcartier Forest Experiment Station, Quebec.

(4) Fire drill. Petawawa Forest Experiment Station.



Getting out logs for camp use. N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.

unique opportunity and a special responsibility to those who must supervise the expenditure. So far as the Dominion is concerned, Parliament during its last session provided, for the second successive year, the sum of \$200,000 in supplementary estimates to be used for forest conservation work on Dominion holdings. In addition, from funds provided for the Department of Labour, \$1,000,000 has been allocated for the financing of the National Forestry Program. Of this, \$400,000 has been transferred to the Department of Mines and Resources for the operation of a Dominion section of the program, which is being carried out in National Parks and at Forest Experiment Stations. The remaining \$600,000 goes to the provinces where it is matched dollar for dollar for the carrying out of provincial forestry activities. These funds are in addition to a vote of \$200,000 made available through the Department of Labour to the provinces under the youth training plan, which amount is also equalled by the provinces. It will perhaps be of interest to recapitulate the expenditures which will be made this year under these special votes.

#### *Dominion funds*

Forest Conservation (Work and Wages).....	\$ 200,000
National Forestry Program, Dominion section.....	400,000
National Forestry Program, Provincial section.....	600,000
Youth Training Projects.....	200,000

#### *Provincial funds*

National Forestry Program, Provincial section.....	600,000
Youth Training Projects.....	200,000
Total.....	\$2,200,000

The regular appropriation of the Dominion Forest Service for all purposes, including the Forest Products Laboratories, is of the order of \$350,000. It will be seen, therefore, that these special votes provide an opportunity for expansion of effort on what is proportionately a very large scale.

The regular annual budget of all provinces for forestry activities is roughly \$5,500,000, and this is spent in the main on administration and protection, although some useful research work is done.

This being the first year of the National Forestry Program, it has been necessary to make a very considerable capital investment in camp and other equipment, and this



Practical instruction in forest surveying. N.F.P. Kananaskis Forest Experiment Station, Alberta.

has limited the number of youths who could be given training and employment this year. However, the organization has been set up so that it can be adjusted to a three-year program, and in the ensuing years it will be possible to devote a greater proportion of whatever money is voted to the enrolment of young men for forestry work.

The camps have been in operation for a sufficient length of time to give some indication of their success. From the standpoint of reconditioning of youth, this is assured. All those who have had an opportunity of seeing the boys coming to camp and observing them again after two or three weeks of outdoor work, good food and regular hours come away with a strong impression of the improvement in physique, spirit and deportment. These young men are naturally and instinctively getting the right reaction to their opportunity. Rapid progress is being made with the work in hand and the young men have proved very adaptable. They are learning quickly, for full and clear explanations are given as part of the routine procedure. The returns in work from the expenditure made will be very satisfactory indeed.

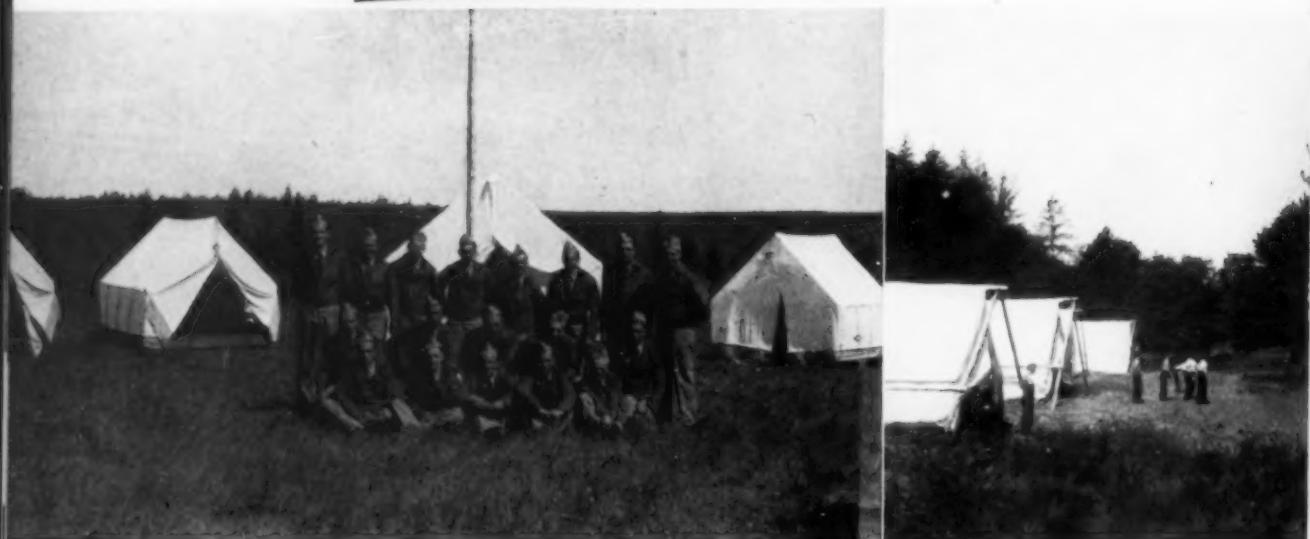
The launching of the National Forestry Program, 1939, marks a new advance in forestry affairs in Canada. One of the most notable features of our forestry development has been the spirit of co-operation which is common among the different governmental authorities, industrial organizations and other bodies interested in true forest conservation. In all provinces steady progress is being made in methods of administration and protection. In the Dominion field, the foresters, chemists and engineers co-operate with forest entomologists and forest pathologists in the solution of forest problems, in the application of new ideas, and in the circulation of worth-while information. The pulp and paper industry, staffed as it is with outstanding technical advisers, gives a lead worthy of its position as the largest single manufacturing industry in the Dominion.

Representing another section of forest industry, the Canadian Lumbermen's Association plays its part in promoting wise use as the basis of our forest estate management. Nor must we forget the several lumber and logging associations in British Columbia, which are strong advocates of scientific principles in forestry.

Right:—General view of N.F.P. Units Nos. 8 & 10. Corry Lake, Petawawa Forest Experiment Station, Ontario.



Below: — Group of enrollees wearing wind-breakers and forage caps. Acadia Forest Experiment Station, New Brunswick.



Right:—General view of N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.



Centre: — Recreation before dinner. N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.

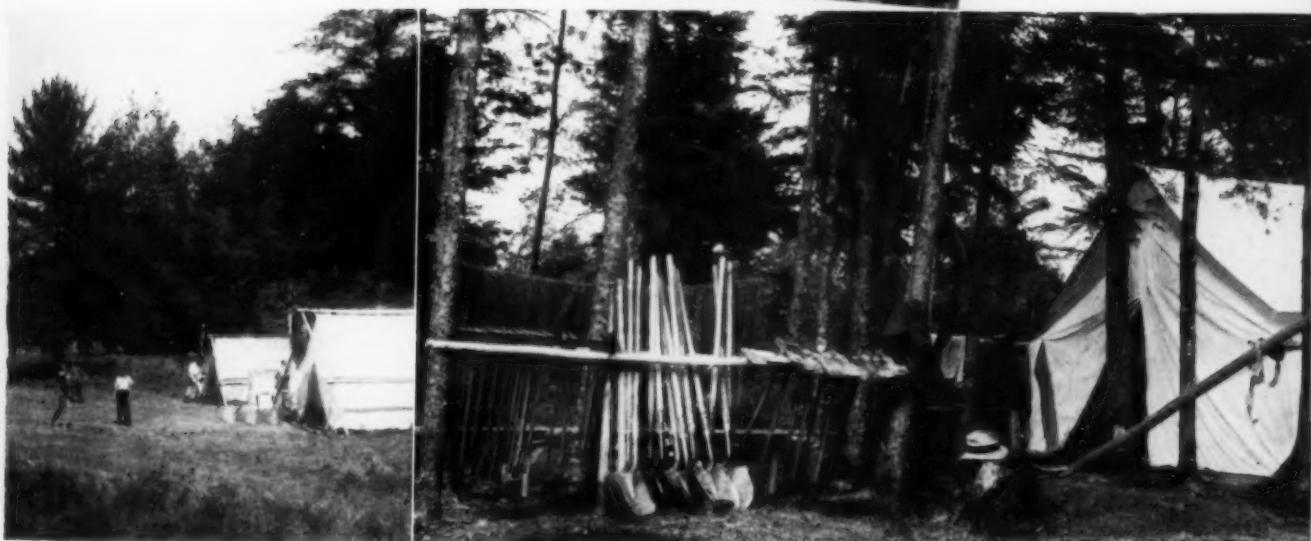
Left: — Swimming in impounded lake. — Sandilands Forest Reserve, N.F.P. Provincial Section, Manitoba.  
Photo Dept. Public Works, Man.



Left: — "As they come in". Enrollees, N.F.P. Unit No. 10. Corry Lake, Petawawa Forest Experiment Station, Ontario.

Below: — Office tent and toolrack. N.F.P. Provincial Section, New Brunswick, Project No. 26.

Photo by Department of Lands and Mines, Youth Training Projects, New Brunswick.



Left: — New enrollees going into dinner. N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.



Right: — Cook and supply tents. N.F.P. Provincial Section, New Brunswick, Project No. 26.

Photo by Department of Lands and Mines, Youth Training Projects, New Brunswick.

Finally, there is the Canadian Forestry Association, the pioneer advocate of forest protection in Canada. This truly national organization continues its educative work which has contributed so much to the advancement of forest conservation.

All these agencies will contribute advice and inspiration to the young men participating in the National Forestry Program who are fitting themselves for work in the woods. As for the boys themselves, the National Forestry Program will not fulfil its true functions unless it serves to instil in the mind of every enrolee a sense of the importance of our forests in the life and prosperity of our country, and implant in his heart a love of the forest.

I now propose to give you some details respecting the organization of the Dominion section of the National Forestry Program. The principles and many of the details are similar in the provincial section. The Dominion section is financed by funds transferred by the Department of Labour to the Department of Mines and Resources. It is under the direction of the Dominion Forest Service, and provides for the operation of 27 field parties of uniform size (called N.F.P. units) in the National Parks and Forest Experiment Stations. Each unit consists of 27 enrolees, together with a leader, assistant leader, cook, and teamster, making a total strength of 31 men. "Straw-bosses", camp clerks, truckdrivers, and cookees are selected from among the enrolees themselves.

From one to four units are located in the Petawawa, Valcartier, Acadia, and Kananaskis Forest Experiment Stations, and in Cape Breton Highlands, Riding Mountain, Prince Albert, Elk Island, Banff, Jasper, Waterton Lakes, Yoho, and Mount Revelstoke National Parks. At Banff and Jasper provision is made for a number of extra enrolees who will act as assistants to park wardens. Special provision has been made for employing small numbers of youths at each of the Forest Products Laboratories at Ottawa, Montreal and in Vancouver. The total number of enrolees to be engaged in the Dominion section at one time is 800.

Enrolment under the National Forestry Program has been restricted to young men between the ages of 18 and 25 who are certified to be in necessitous circumstances. Applications were received at specified offices of the Employment Service of Canada, and applicants whose qualifications appeared most closely to approach the requirements were interviewed by a

board representative of the employment and relief authorities and the Dominion Forest Service. The number of applicants greatly exceeded the number of vacancies, and unfortunately many boys who wished to enrol had to be turned away.

On arrival at his assigned project the enrolee is detailed to his unit and measured for clothing. The uniform consists of khaki drill shirts and trousers, forage cap, frieze windbreaker, slicker, boots, running shoes, socks, and minor items. Half of the cost is borne by the enrolee and half by the Government. Distinctive badges or crests are worn on the windbreaker and cap, and go far to increase the smartness of the outfit.

After a preliminary "breaking in" period, intended to bring the boy into good physical condition and to accustom him to the use of the axe and other tools, the enrolee's working day is eight hours. One half-day a week is devoted to training by means of lectures and demonstrations, and Saturday afternoons are ordinarily given over to organized recreation. Some sports equipment is provided by the project and several experienced men in the organization attend to physical training and games.

In the recreation tents provided for each unit are magazines and other reading material. These tents are used for instruction as well as for recreation, and on Sunday may serve religious purposes. Arrangements for the holding of Divine services are the best that local conditions permit.

The rate of pay received by ordinary enrolees is \$1.00 per day worked, time spent in training being counted as working time. The enrolee also receives free board, lodging, and medical attention, if it is needed. No boy may draw more than \$10 per month of his pay, the remainder being deferred. This ensures that, when the projects are closed in the fall, the boys will leave for their homes with money enough to support them for some time.

The training provided cannot, of course, be of an intensive nature. It is designed, rather, to open up new vistas, to make enrolees conscious of the importance and complexity of the Canadian forests, and to make them better citizens. These young men need only some hope of employment in the future to enable them to play a man's part in the country in which they live. This encouragement cannot come from government; it must come from industry. There is a responsibility on those in executive positions in industry to give these youths every possible chance for employment.

Right:—Listening to instruction.  
N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.



Left:—Enrolees listening to a lecture. N.F.P. Kananaskis Forest Experiment Station, Alberta.



Right: — First-aid instruction.  
N.F.P. Kananaskis Forest Experiment Station, Alberta.



Left:—Preparing refuse pits. N.F.P. Unit No. 9. Montgomery Lake, Petawawa Forest Experiment Station, Ontario.



Left: — Entrance to Petawawa Forest Experiment Station. Signboard at entrance to Petawawa Forest Experiment Station, Ontario.

Below:—Fireguard plowing and discing. Sandilands Forest Reserve, N.F.P. Provincial Section, Manitoba.

Photo Dept. Public Works. Man.



Left:—View from Observation Tower. Sandilands Forest Reserve, N.F.P. Provincial Section, Manitoba.

Photo Dept. Public Works, Man.

Right:—New enrollees leaving for camp after disembarking from the 'Aspy', South Ingonish. Cape Breton Highlands National Park. C.B.I. Nova Scotia.



Right:—Peeled logs being cut into pulpwood bolts; material salvaged from road construction. N.F.P. Acadia Forest Experiment Station, New Brunswick.



Left:—Enrolees bathing at South Ingonish beach. Cape Breton Highlands National Park. C. B. I. Nova Scotia.



Right:—Bridge under construction. N.F.P. Unit No. 19. Banff National Park, Alberta.



Left:—N.F.P. Unit No. 27, Yoho National Park, B.C.



# THE LATEST GOLD RUSH

*Zeballos Revisited*

by MAUDE M. STUDHOLME

THE golden voice of Zeballos is like that "Shot at Concord". It is heard round the world. Zeballos, the infant gold-town which is wedged in the forest-cloaked mountain wilderness of the wet, west coast of Vancouver Island, British Columbia.

Three years ago bears and trappers roamed there and the odd roving fisherman with a flair for prospecting. These men slept on cougar skins; ate the sweet meat of cougar legs — and enjoyed it.

Two years ago the fame of Zeballos burst upon the world when ore worth \$1,000.00 a ton and over was delivered to the smelter.

Eighteen months ago, after a two-day boat trip from Vancouver, a row-boat and then a pick-a-back ride to its wharfless shore, we made its acquaintance. A handful of squatters' cabins and lean-tos dotted the bleak and rainy beach; a veering scow at water's edge served as a general store; dripping salmon-berry branches everywhere held impaled the remnants of dog-fish—the backwash of high tides—and a planked-stringer mud-street terminated at the one communal latrine. Since then the town and mines' population has grown from 150 to 1,000, and is continuing to grow apace.

In this spectacular expansion aircraft is playing an important rôle. Quite recently at the breakfast table in Vancouver I opened a hurry-up invitation which enclosed a double-daily aeroplane service to Zeballos. An hour later, with cotton-wool in my ears, I was out-pacing hurrying clouds, 7,000 feet above a Canadian Pacific liner in the Gulf of Georgia, headed for Zeballos. Through an eerie, sun-cloud light we swept across Vancouver Island's snowy peaks—an endless panorama lying as if draped with crumpled white velvet.

By noon the aircraft nosed down, glided past three other planes already at anchor in Zeballos Bay, and tied up at the aeroplane float by the new government

wharf beside a white zinc shed that shimmered in the sunshine.

On all sides was movement. The seething activity and excitement reminded one of a bee-hive let loose. Over and above the pounding of pile-driving for another wharf, the din of a saw-mill and the drone of Deisel "cats" taking out sea-gravel for roads, sounded the creaking crane of the "Southholm" discharging her 190 tons of freight.

On the dock lay four thousand sacks of high-grade ore (and several of the sacks had been thumb-pierced by pocket-piece hunters) waiting to be shipped to the smelter. This ore, worth from \$65.00 to \$85.00 a sack, was from the "Privateer", the fabulously rich mine which is making history for Zeballos.

The first glance at the precocious profile of the town was arresting. Amid a mass of new and naked looking structures a hotel of noble proportions adorned the shore-line, while the 66-foot business artery, which had been gravelled in continuation of the raised approach to the wharf, gave just the hint of a canyon as the new Bank of Commerce building loomed up among buildings which included two more hotels, a post office, clubs, cafés, stores with plate-glass windows, a weekly newspaper office and what-not. Along that part of the town where we remembered ankle-to-thigh-deep mud, we might have ridden bicycles. It was during our luncheon of local honey clams we learned that even old-time prospectors, returning with the certainty of habit after absences in the hills, had found difficulty in finding their own shacks, so suddenly and completely had familiar landmarks been wiped out.

The credit for the rediscovery of Zeballos proper, as far as it is possible to apportion, belongs to two groups of Welsh, Swedish, Norwegian and Canadian fishermen and loggers who espied chunky yellow nuggets in the Zeballos River, washed down from rich veins in the volcanic slopes.

Top left:—Hills where the gold still sleeps.

Bottom left:—Aircraft play an important rôle in the development of Zeballos.

These veins to-day are fattening their pocket-books beyond dreams; and to the greater advantage of British Columbia, they attracted the attention of the Dominion Government at Ottawa. As a result, Professor M. F. Bancroft was sent out and his comprehensive geological report, published in January, 1937, set the stage for the dramatic developments of to-day.

Zeballos has been called a rich man's gold strike. The great gold rushes in the past have been for visible gold; gold that could be picked up for the taking; gold that could be put on the bar for drinks or in the bank for the future. Coolgardie in Australia, the creeks of California, the Klondike of the Yukon have all produced that kind of gold. The Zeballos gold strike is different. The gold is there, but it is hidden in the womb of the hills and must be delivered by scientific methods. Man is not enough. There must be equipment; there must be science; there must be development in the field of geological progress.

The rewards of labour, however, are also greater, for this modern gold field

demands perpetual man-power, and that is paid for in steady wages — a thing unknown to the older type of miner who either made good or moved on. To-day the solid rocks are being attacked with machinery to snatch from them their treasure. Formerly the placer gravels lured us with their easily won treasure.

Yet, perhaps, never in the history of any gold rush has the vanguard of prospectors been so largely drawn from youth and from amateur ranks. These have been encouraged by comparatively easy accessibility and have been spurred on by the fact that the most promising gold-bearing veins to date have been discovered by novices rather than by experienced prospectors.

Barbers, carpenters, cooks, young and old, including men from the prairies who have never before seen a mountain, have turned prospector. Most of them are equipped with fifty-cent compasses, bundles of white stakes and miner's licences tucked away in their gray wool shirt pockets. The hills for a radius of twenty miles around Zeballos have been staked

The Northland "where mountains are nameless".





Zeballos is beautiful.

and many claims have been sold "sight unseen" to be prospected later. And as each day in Zeballos heralds some new strike or some spectacular development along the west coast there arrives with every incoming boat many new claim-stakers, not to speak of the gold-avid who arrive by plane.

There are days, we learned, when before breakfast, the Mining Recorder registers from thirty to forty claims for men of divers races, many with names as unpronounceable as a Welsh holiday.

What the current spring-summer influx will bring forth is a matter for conjecture. We found it hard to shake the impression, even at this early stage, that the map-makers will never catch up with the mushroom growth of the gold district.

Eighteen months ago we trudged single file along a mountain-side mud-trail, over rushing cataracts and ravine culverts, backing into the rain-forest's rank hill-side growth every now and then to make way for packers on their way to the mines—men who had sweated and carried on their strong backs thousands of tons of food

and mine equipment over the same foot-path. To-day an excellent road built by the British Columbia Government covers the seven-mile stretch, and the Government has authorized a non-stop road-building and west-side suspension bridge program to serve the mines.

Men, representing Ontario and United States interests, are sizing up the ground. More come in almost daily by chartered plane. It was an innovation to see them "popping" about the gold country by air as casually as we in the city mount a street-car.

Each morning at dawn the "put-put-put" of "kickers" crossing the Bay announces that young geologists, equipped with the latest scientific instruments, are bound for some age-old mountain where gold still sleeps.

The departure night of the Canadian Pacific boat "Maquinna" from Zeballos is unforgettable. It happens every ten days. A continuous stream of heavily shod men tramp up and down the gold-town street, their lanterns and flash-lights looking like swarms of fire-flies dancing near the



Trucking six months ago.

keeping each other company in the wilderness of the gold mountains.

As we reached the snow-line, we paused among the budding wolf-willows and pungent ground hemlock which was trellising its way through rapidly melting ice patches. The air was soft, and through the northern rain-forest's opaque light a pale and exquisite veil faintly covered the face of April. Through a clearing in the huge, moss-swathed cedars, we glanced backwards at the folds of hills clothed richly in green-black timber, timber representing almost unlimited wealth above the ground while man nibbles for the treasure he cannot see. Strange, indeed, especially when the price of logging is a mere bagatelle compared with the price of digging for gold.

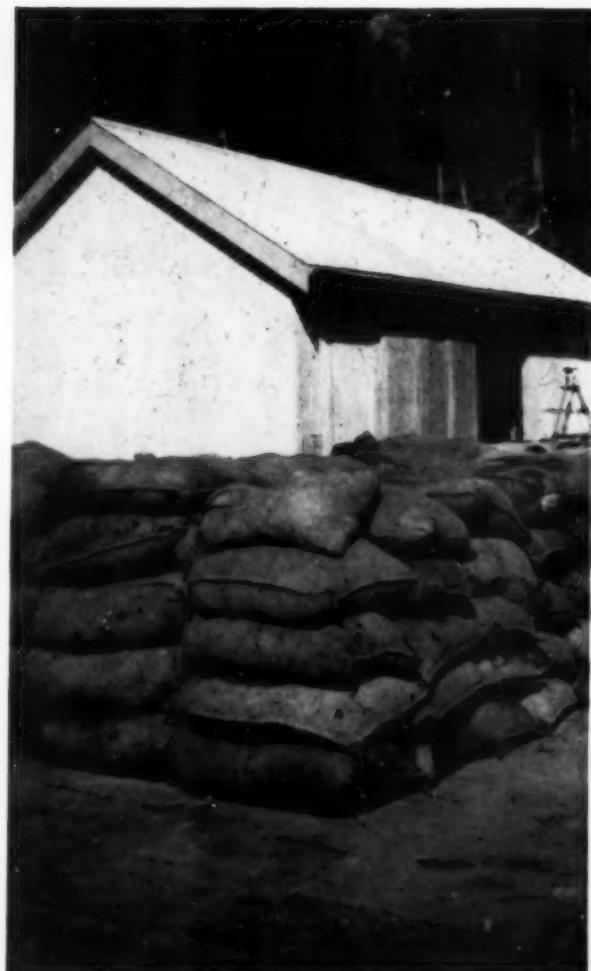
At the mines we found aggressive development. There were new camp-sites on lower plateaus where felled trees lay about like giant nine-pins. There were new camp buildings, their window-sills ledged with free-gold specimens of ore

ground. It seems as if the townsfolk as well as every miner from the hills are in circulation, for apart from business to be transacted, to meet the boat is the one social necessity.

Around the post office, during the boat-night hub of activity, as many as fifty men stand in line waiting either for home letters, for money orders to send off by the out-going boat, or to register claims.

On the way to the mines exploration work was everywhere in evidence. In the green-black hills newly riven strips indicated where men were pushing their way into the gold region. On all sides was the mark of the axe along newly blazed trails.

First from one mine and then from another a succession of blasts reverberated and echoed. From mines close by came explosions of loud surface blasting; from others in the distance came long, continued rumbling — then a spell of silence. It seemed as if these mines were bent on



Four thousand sacks of high-grade ore awaiting shipment.



A northern virgin forest-jungle.

fit to grace museums. The cook-houses and general housing conditions for the men were the most modern in camp comfort.

We visited new and longer tunnels than those we had seen eighteen months previously. There were drifts that glistened as if streaked with tinsel. The remarkable continuity of these veins was explained to us and how the ore had assayed beyond expectations. At the mouths of the tunnels glittering ore dumps strung far down into ravines from foundational structures that looked sturdy enough for an era instead of for the life of a mine.

It is at the bend of the road, where the present townsite ends and the new squatter town begins to curve with the Zeballos River, "on the way to the mines", where one catches the birth-note spirit of a gold-rush town.

We saw this section under favourable conditions. Early spring was in the air; the busy squatters had left off their coats and new spring growth sprouted around the numerous tents, tepees, tar-papered shacks and dog-kennels. The sun was reflected in the hazel eyes of dogs who guarded their owners' meagre goods and chattels, and a whole gamut of spring noises mingled with the hammering, sawing and the building of perhaps another hundred shacks. Above, in the high trees, a raven cawed his raucous love song, while

smaller birds darted here and there with bits of straw as if they too were keeping up with the march of events in squatter town.

Along one huge, fallen tree a squirrel flirted with the idea of gaining admittance to a tiny tent, half open, where its occupant the night before had slept on a mattress of cedar boughs. Just outside was the tiniest stove where the squatter had cooked his supper under the stars.

New-comers have built without regard for danger from falling trees, have straddled logs and have taken advantage of the canopying roots of fallen giants. Even beside and around a powder house they have built, ignoring the large red letters, "Danger, blasting will commence at once", as available building ground is very scarce at Zeballos.

The sanitary and mosquito conditions of the camp are being given consideration. While at this primitive stage it would be impossible to pass sanitary laws adequately geared to health's best interest, the "city fathers" with splendid foresight have decreed that in the absence of a sewer system no garbage shall be dumped in the slough or in the drinking waters of Zeballos River.

It is a fair prediction that this town of promise, as time goes on, will become as great a "melting pot" as any centre on the continent.



Off to the gold hills



The planked-stringer main street eighteen months ago.



The first gasoline station being towed into Zeballos.

Jaunty buildings  
mushroom up  
to-day.



Trucking along the  
government wharf  
to-day.



A hive of human  
industry.





Above: — Where  
huge nuggets have  
been found.



Left:—Alfred Bird,  
locator of the sensa-  
tional "Privateer  
Mine" and other  
important properties.



Right : — The log  
cabin of Alfred Bird,  
one of the discover-  
ers of Zeballos.



Above: — "One of the first", Alex Stewart.

Right: — Charles Smith, locator with others of "Gold Peak Mine" and "Gold-fields."



Left:—Staking claims.



Glacial formation on the side of Wayana Potosi, Bolivia. Great quantities of gold and tin are taken from this region annually.

# RURAL LIFE IN THE HIGHLANDS OF BOLIVIA

by EARL C. MERRICK

THE great plateau of Bolivia, in itself, is unique. A vast rolling plain thrown up to an altitude of 12,500 feet, hemmed in by snow-capped "cordilleras" and ice-fields that soar 10,000 feet still higher, it represents about one-quarter of the total Republic. Agricultural life on this plateau is even more strange. For a Canadian farmer to think of growing potatoes so near to the stars would seem to him like a venture into the realm of fiction. But add to the altitude a wet summer that begins in December and a dry winter that comes in June, all beneath a tropical sun, where the annual mean temperature is 50 degrees and the Canadian farmer would feel he had ventured too far into mental liberty for sanity's sake. Yet he is still well balanced — if he is in Bolivia — for such are the conditions and potatoes do form one of the three principal crops.

Among a number of varieties, the names of which would mean little, the Bolivian black potato stands first. In flavour it would easily lead any of those from North America or Europe that the writer has tasted. In size it does not run unusually large. Its appearance is somewhat against it, being ball-shaped with deep-set eyes and a dark purple skin. The inside, however, is just as white as the outside is dark and when properly cooked and it bursts open like a double handful of sweet dry cream, its reputation is secure.

The other two large production crops are beans and barley. The latter is of a hardy variety, producing heavily with abundance of straw and will run two harvests to the year where there is irrigation. This places barley above wheat in importance since there is considerably less risk from frost and wet and the Indian consumption of it as food for man and beast maintains the demand. Wheat may be grown but brings no better price. Manitoba No. 1, Red Fyfe and Marquis are

well-known varieties together with productions from the Argentine and Chile.

The bean that is grown is a large green type, rough in contour and exceedingly nutritious. It stands next to the potato as Indian food, boiled, baked or toasted. To these crops may be added the familiar names of oats, corn, vegetables — particularly cabbages and cauliflowers — and alfalfa. In the case of vegetables a long growing season gives them magnificent flavour, even when primitive cultivation fails to give size or quantity. In the list of national products unknown to the northern farmer and yet potential additions to his fields, Bolivian Quinoa and Bolivian Oca rank first.

Quinoa has long been known to herb catalogues yet to the knowledge of the writer, its place and value as a South American cereal seems new information in Canada. The seed is near in size to that of our turnip or radish and is cream in colour. When sown sparsely, broadcast after the native custom, it produces a spike four or five feet tall with an unusual capacity for seed. It matures in the fall under light frost and turns a multitude of colours comparable only to the autumn shades of Canadian maples. When the quinoa fields of the Bolivian highlands are ripe the country-side could never be more like an immense flower garden. The Indian farmer beats out the heads when they are well dried and before using the grain, washes it thoroughly in a convenient stream or irrigation ditch and rubs it vigorously between his hands. This process removes a soap-like substance with a bitter flavour. Again the grain is dried, then ground between stones for flour, or toasted whole and cooked as porridge. A more agreeable dish could not easily be found and further uses of it are certain to reward the interested experimenter.

The "oca" is a tuber, two to five inches in length and about the thickness of a



Cabbages and cauliflowers grow well on the Bolivian plateau.

Agricultural development in the highlands of the Andes is still in its early stages. It is hampered considerably by the method of land tenure known in Latin America as the "peonage system". In the period immediately following the conquest of South America, four hundred years ago, the white man became the land-owner with excessively large holdings and the native became the labourer occupying exceedingly small rented portions. The first of these classes had no incentive to greater and better production and the second had no liberty. To-day under economic pressure steps are being taken to correct these old evils. The land-owners are co-operating in experimental work and the government is interested in educating the Indian.

The Aymara Indian, native to this particular part of the country, is a picturesque individual. Invariably you will find him with his oxen or his llamas, his balsa or his mule but in whichever combination, he represents a whole primitive economy worthy of study. He clings tenaciously to the soil. He was born there and hopes to die there. Occasionally he may be enticed from it by the offer of high wages in the mines but he has learned by the bitter experience of friends and neighbours that the most he may gain there is a place in a cemetery on a cold mountain slope. Even the dangers and abuses to which he is exposed in the cities drive him back to his small fields.

His character, like the forbidding mountains amongst which he has lived for unknown centuries, is rugged and impenetrable. Essentially industrious, because of the meagre capital upon which he must finance existence, he has become astonishingly self-sufficient. The average Indian may be a weaver, a tailor, a potter and a farmer at the same time. He is distrustful of the white man though not entirely unapproachable with modern inventions. He has adopted the sewing machine whole-heartedly but remains skeptical concerning windows in his house. The children respond to an opportunity for education and no finer product of elemen-

small sausage. It is a profitable crop for the light stoney land of the higher country and attains its most agreeable flavour by being exposed for days to the rays of the tropical sun. The Indians have an interesting method of preserving the oca as well as the small potatoes — the latter a particularly numerous article from their poorly fertilized fields. In the late fall when heavy frost comes, they spread bags of oca or potatoes on a level piece of sod ground and allow them to freeze at night. In the morning when the sun becomes hot, the Indian family tramp the frost out of the tubers with bare feet, walking around and around the area, cleverly gathering them together with their toes into little clusters in order to better squeeze out the juices. For a number of nights and days this process is repeated until nothing remains but a light dry husk. In the case of the oca this is called "kaya" and of the potato, "chuño". These two will keep indefinitely, may be carried easily by the Indian traveller on his long journeys and cooks easily into a most savoury dish.

## RURAL LIFE IN THE HIGHLANDS OF BOLIVIA

tary school training can be found than the young Indian lad who has had such a privilege for five or six years. His usual ambition is to turn about and be a teacher of his neighbours and he himself is the key to a vast educational problem in Bolivia. White teachers or mestizo invariably lack an understanding of Indian mentality, to say nothing of an ability or willingness to go and live with him and so penetrate to the best material of his personality.

About the only diversion that the Indian knows is the "fiesta" to which he is passionately devoted, taking care not only that it comes often but that it lasts long. For days the flutes and drums make the country-side echo and re-echo and the Indian girls swing tirelessly with their vividly coloured skirts, worn as many as ten at a time, giving a real touch of gaiety to an otherwise drab picture.

These primitive people have as their distant background the almost mythical history of the Inca and Pre-Inca empires. In the days of their grandeur they were sun-worshippers and animists, clothing nature and the phenomena of nature in a wealth of legend. The three supreme facts of their existence were the warm sun, the awesome snow-peaks and the mystery of

Lake Titicaca. So they interwove these, one with another, in stories of love and war, life and death. These stories live to-day, strangely mixed with the rudiments of Christianity and are as deathless as tradition. In all of them the mysterious lake attains almost to the dignity of personality, being feared and trusted in the alternate moods that it, in itself, inspires. Its calm surface tempts the fisherman to push out from shore in his reed boat. When he is far from shelter a demon in wind and waves pounces upon him from behind a rocky point and his boat drifts back empty. In seasons when the deity of the land has not been kind, a company of fishermen with their curious craft sail out to mid-lake and there in solemn ceremony beseech the chief of the finny tribes that dwell below to remember the misery of the humans beings who die of hunger.

The fish caught are few in variety and only make up by numbers what they lack in size. The "ispi" and the "karachi" are scarcely larger than sardines but the fishermen, working in pairs with a net of llama hair between two balsas, bring them

The Indian girls "swing" to the melody of the pipes and with the aid of ten skirts.





home by the hundred weight. When the patron spirit of their calling looks down with favour, they may have a catch of "bogas"—a larger type for which the people of the lowlands are willing to pay a much higher price.

Lake Titicaca is only one of the wonders of the Andes Mountains but it is one that has no rival. It lies at an altitude of 12,500 feet, is almost one half as large as Lake Ontario and forms a water highway for freight and passenger steamers between the republics of Peru and Bolivia. Like the mythical figure of the king in the Old Testament story who had "neither beginning of days nor end of life", this jewel in the crown of the "Cordillera Real" is unique. It receives its cold waters from innumerable rivers that are dry for months in the year and empties a saline flood through the slow-moving "Desaguadero" into the equally mysterious Lake Poopo, there to waste away in salt marshes and desert air.

The "balsas" or reed boats of Lake Titicaca and the "balseros".

Lake Titicaca, at an altitude of 12,500 feet, is almost one half as large as Lake Ontario.



By all the laws that govern nature in a world that climbs from sea level, through vegetation and forest to barren wilderness and perpetual snow, one would expect to find ice-cliffs overhanging Titicaca and glaciers plunging their cold noses into the blue waters. It is not so. Fields of ripening barley, any month in the year, literally join their gold with the dark green reed-beds and when northern winter is at its height, acres of bean blossoms send up delicate fragrance to mingle with the sunshine. Above the fields rise the brown hills, above the hills the white mountains and above all an ocean-blue sky. Everything scintillates in the rare atmosphere. Such is the setting of this gem of nature, varying little through twelve months of the year except for seasons of unusual drought when the green border of the lake changes to squares of black and red and yellow soil.

By the long winding shore one will find the busiest and most interesting centre of

The Aymara Indian and his oxen, native to the highlands of Bolivia.

The great plateau of Bolivia . . . a vast rolling plain thrown up to an altitude of 12,500 feet.



life. There the women come to wait for the return of the "balseros", and sitting in groups on the ground chat and spin and tell of their ills. There, little Indian urchins, dirty, bare-legged and often naked, watch herds of miserable pigs dig for roots, or bony oxen munch water weed. Men in "balsas", drifting a few yards from shore pull up bunches of dripping weed by means of long poles with knives on the ends. They pile it in the straw boats to be brought on shore for the animals. Others wade in the shallow water of the reed-beds, pushing hand-nets before them in search of the sluggish catfish. Ducks and divers squabble noisily beyond the reeds; great awkward herons flap their way heavily from one perch to another; worried little sandpipers run in and out of the hollows complaining loudly of everything in general while hosts of white gulls scream and wheel overhead, waiting also the return of the fishermen.

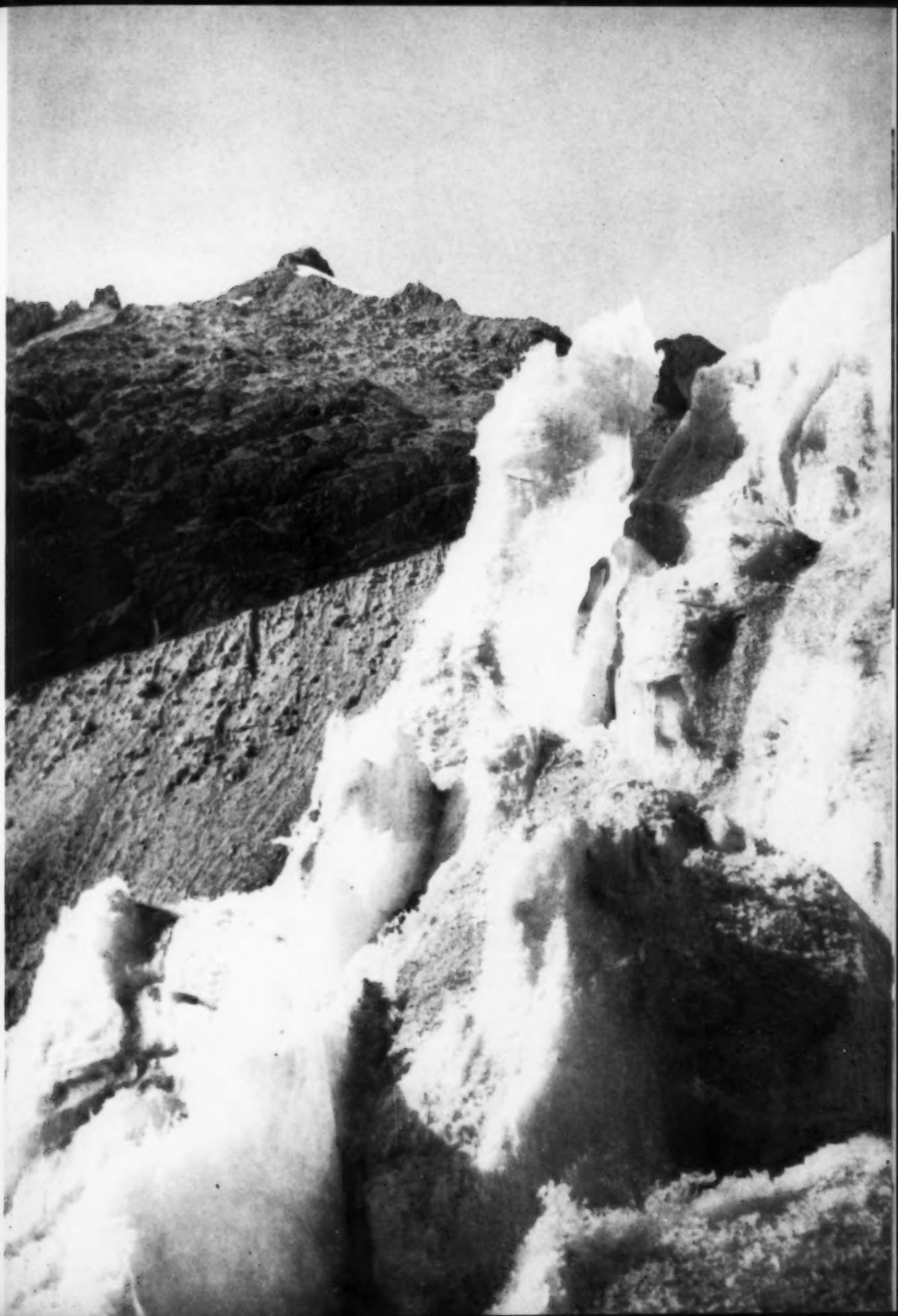
In all of this world of the hills one can find no hurry and little of change. It seems as though life has been moulded in the same spirit that cast the most curious of all lakes so near to the Southern Cross and

works its own wonders in ice or rock with a capricious will. It is the spirit that moves only by ages, even millenniums while a totally different world circles it around. For one must be fair to the rest of Bolivia and remember that the Indian does not represent its dominant character nor its degree of progress. Railways, highways and great development projects radiate from or centre upon the modernized cities of La Paz, Oruro and Cochabamba. Tin, gold and silver and a host of other metals flow from mines, the capacity of which is yet to be known. In the much disputed region of the Chaco, Bolivia is now refining her own gasoline. From the great jungles of the Beni, eastward from the Cordillera Real, valuable woods are now reaching distant markets. A modern age has broken through natural barriers and Bolivia's riches are being contributed to the wealth of the world.

Right—The "ploughpoint" of a glacier cutting its way down the side of Wayana Potosi.

Erosion formation above the city of La Paz.







Potatoes form one of the three principal crops.

Quinoa produces a spike four to five feet tall with an unusual capacity for seed.

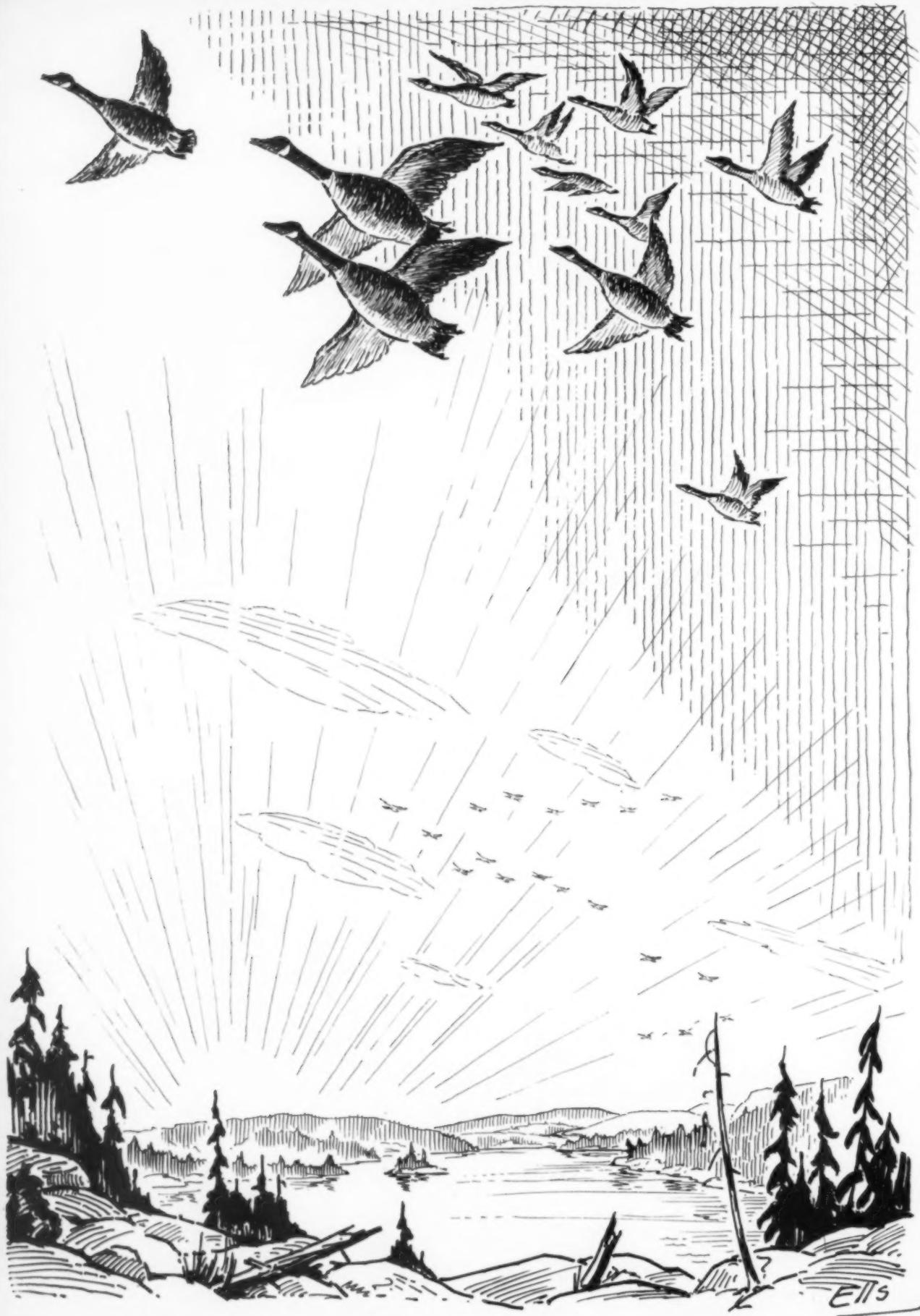




An Indian cemetery near a mine in the Andes Mountains.

The Aymara Indian with his mule is a picturesque individual.







## *My Symphony.*

*by S. C. ELLS*

Clear cut against pale tinted saffron dawn,  
Dim against star strewn highways of the sky,  
Stark against golden radiance of the sun,  
North bound the gray geese fly;  
Unerring, unafraid, on tireless wing,  
To friendly safety of their northern home,  
Stout-hearted heralds of the verdant Spring,—  
*They come! they come! they come!*

High over teeming, hostile haunts of men,  
Low over friendly solemn solitudes,  
Above the trackless moor and reeking fen  
Where the long silence broods;—  
O'er rolling woodlands where deep shadows lie,  
Above the foaming flood and nameless lake,  
With strident clamour of triumphant cry  
*They call, 'Awake! Awake!'*

.....

There's muted music in the shadowy vale . . .  
On lonely hill . . . along the wind swept shore . . .  
As myriad voices tell their age-old tale,—  
And life awakes once more;  
But over northern wilds the clangour clear  
Falls from the skies in wild free harmony,  
In call of gray-winged, marshalled hosts I hear  
*My northland symphony!*

## EDITOR'S NOTE-BOOK

Roy Alexander Gibson, Director of the Lands, Parks and Forests Branch, Department of Mines and Resources, was born at Brandon, Manitoba, where he received his education. Entering the service of the Federal Government in 1908 with the old Department of the Interior, Mr. Gibson was appointed to his present position on December 1, 1936, when the Department of Mines and Resources came into being. Mr. Gibson is also Deputy Commissioner of the Northwest Territories, a position he has held since 1921.

Maude M. Studholme of Vancouver, British Columbia, contributed "The Latest Gold Rush" appearing in this issue. Educated in England and France, Mrs. Studholme has spent a life in travel, including some years along the North African Littoral, chiefly in the least Europeanized sections of Tunisia.

Philip C. Curtis, who wrote "Grand Manan, Fundy's Isle of Charm" was born at Pawtucket, Rhode Island. He received his Ph. D. degree in chemistry from Brown University in 1911 and spent twenty-five years in technical and executive work in the textile business. Retiring in 1938, Dr. Curtis is now living in Brooksville, Maine.

Earl C. Merrick, B.A., B.Th., is a Canadian, born in a rural community of Simcoe County, Ontario. A graduate of McMaster University, Hamilton, with supplementary theological training in the United States, he served for a time as a minister of the Baptist Church of Canada. In 1934 he was appointed by the same body to work in Bolivia and since that time has administered an agricultural and educational centre in the region of Lake Titicaca.

## AMONGST THE NEW BOOKS

Books about the British Isles are again in full spate and to travellers and stay-at-homes alike, there can scarcely be too many of them when they are of the quality and workmanship of the various Batsford series. In all of them there is a sound basis of knowledge of the life of the people, the agricultural and economic problems, diversified as they are by the geology and topography of the land and, alas, by changes brought about by the industrial revolution and governmental mismanagement or neglect. The beauty and strong individuality of each district is skilfully brought out by authors who dwell there and have an intense love for their native haunts.

So we have *East Anglia*, by DOREEN WALLACE, well-known novelist and a fellow student of Winifred Holtby and Vera Brittain at Oxford. She makes no claim to being an antiquarian, an archaeologist or ecclesiologist, saying she is simply a country-woman with an eye for beauty. Her chapters on Farming in East Anglia, in the Arable, the Cornlands, the Fens, Breckland and the Broads certainly show her to be a shrewd and experienced country-woman. In her descriptions of the numerous towns and villages and the coast, estuaries, meres, heath and marshland landscapes in Norfolk, Suffolk, Essex and Cambridgeshire we realize the tremendous appeal to her beauty-loving spirit that is made by the land which produced such painters as Constable, Cotman, Crome and the rest. On the architecture of the villages, market-places and streets, and especially of the many remarkable churches such as Ely, Lavenham, Southwold, King's Lynn and Norwich, Miss Wallace is an ideal commentator. Their history, and quaint legends connected with their founding are related with keen enjoyment and sparkling wit. Cropping up here and there as one reads, are names of famous people, cultivators and engineers who reclaimed the fenlands, artists, writers, churchmen and warriors, who left their mark on this eastern province of England. The author is at her happiest in her account of the East Anglian dialect — or its Suffolk variant, since that is the one familiar to her. The end maps are good and the numerous illustrations are, of course, from very beautiful photographs.

Another attractive volume of the Face of Britain series is by HUGH McDIARMID, a Scottish poet: *The Islands of Scotland, Hebrides, Orkneys and Shetlands*, (London: Batsford, 1939, 8/6). Who was it said "Poets are the most practical of men"? This book well illustrates the saying, for Mr. McDiarmid deals with the past, present and future of the people from a practical as well as a philosophical point of view. "He seeks to bring out the relations of the Islands to Scotland, geologically, culturally, commercially and otherwise: at the same time he gives due consideration to their wild beauty, their fauna and flora, their historical association and the habits and traditions of their inhabitants with evidence of a full knowledge of all that has been written about and on them".

The author lives by choice on one of the northernmost Shetland Isles. He knows and has visited most of Scotland's eight hundred islands. There are, he tells us, more than five hundred in the Hebrides. In the Orkneys there are nearly sixty, twenty-five of which are still inhabited, and over a hundred in the Shetlands, with, of course, innumerable "skerries", which are only little snags of rock jutting out of the water. Well aware of the sad economic plight to which many of them are now reduced Mr. McDiarmid yet believes that the people and their way of living are unique and valuable to Scotland and the world and his book is in effect an impressive plea for their preservation. The descriptive chapters are, as one would expect, unusually vivid and delightful, but the part of the book in which Mr. McDiarmid reveals his passionate love for these rocky islands and their glorious austere scenery, the simplicity and strength of the people, is in the long introduction and "author's note." There he waxes eloquent on the superb poetry of the Hebrides, the difficult language question, (almost he makes us wish we had "the Gaelic"), the great music of the pipes, and many other aspects of island life and tradition. These chapters are enriched by frequent quotations from

his own poems and those of other Scottish writers, which, with the wealth of splendid illustrations bring home to the reader what a splendid heritage Scotland has in these rugged northern islands. It is surprising to learn that the Orkneys and Shetlands have practically no ice and snow in winter and though nearer the Arctic Circle than to London they hold the sunshine record for the British Isles.

*The Lowlands of Scotland*, by GEORGE SCOTT-MONCRIEFF, (London, Batsford, 1939, 8/6 net), is a fascinating book by a witty author who, when moved by the misgovernment of Scotland, wields a mordant pen. He lives in the Lowlands and knows well its bare rolling hills, thriving valleys, and the rich farming country of the southern Uplands. Their hard-working, quietly humorous and highly characteristic inhabitants are typical of much that is finest in Scottish scenery and character. The Border valleys and Galloway offer great scenic beauty, the market towns and sea-side ports and villages each have their own striking individuality skilfully brought out by the author and gloriously pictured in the many admirable photographs. These counties too are rich in historical and literary associations, the Scott and Burns country, the ruins of the great abbeys and monasteries, the architecture, and archaeology, are all competently treated as are the cities of Glasgow, Edinburgh and Stirling and the smaller market towns. The book has a full index, maps, and a charming coloured frontispiece.

*The English Countryside*, (London: Batsford, 1939, 6s.), a volume of the Pilgrims' Library is a survey of the chief features of English scenery by ten authors, each in close sympathy with his subject. This gives great charm to a rich and varied theme. "The changeability of the weather within the bounds of the climate and the diversity of the rock formations within the bounds of the four seas, account for the unique quality observable in the English landscape, its multiformity. In remoulding England . . . the countryman was granted a whole continent of varieties within the spatial limits of a single country — infinite riches in a little room". This theme is developed by Mr. Massingham in his introduction. He too writes of the Downs, his intimate knowledge of their extent and topography and mention of innumerable place-names becoming almost bewildering so that the reader finds doubly delightful the enchanting description in his second chapter of the craft of chair-leg bodging. The craft is still practised by a few fine old "bodgers", who live in idyllic surroundings and are happy in their poverty because they are "master-men". "He (the bodger) not only takes his tools and materials from nature, but he repeats 'the ordered unfoldings of nature from the seed to the flower, from the grain to the ear, from alpha to omega . . . With his own hands he transforms them into the final form he destines for them, to be at once useful for the needs of his fellows and pleasurable to their eyes. The bodger buys and axes his own trees . . . he conducts all the operations from the tree in the forest to the chair by the fire and, like a magician, wills nature to come out of the weather into the home".

to come out of the weather into the home. Other chapters are devoted to "The Hedge Chequer work", most beautiful in the Midlands, "Valleys and Orchards", "Hills and Wilds", "Moors and Fells", "Mountains and Lakes", "Sands and Heaths", "Fens and Levels" and "The Coast Lands". A brilliant introductory chapter by Charles Fry develops the theme of the evolution



## IN MONTREAL

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J. ALDERIC RAYMOND  
Vice-President

of the country-side of to-day from the very different country-side of mediaeval and earlier times.

The coloured frontispiece, "A South Shropshire landscape from the Brown Clee, looking over Corvedale and Wenlock Edge to the Wrekin" is a foretaste of the delights in store in this beautifully written and beautifully illustrated book.

Travellers in the old and new worlds find a fertile field for discussion in comparing our western mountain regions with those of Switzerland, particularly with respect to their rich Alpine flora. Glowing descriptions of Rocky Mountain flowers abound in the works of Canadian and American nature-lovers, but illustrations are often disappointingly inadequate. Switzerland has been more fortunate, witness the production of a superb book *Alpine Flowers*, printed on the ten-colour Iris press of Berne and published in London as one of the Art and Nature in Colour series, by Batsford (London: 1938, 10/-net). It consists of thirty-six full page plates from water colours specially prepared by Paul A. Robert. Professor Carl Schroeter, author of "The Swiss National Park", "Vademecum of the Alpine Flora" and numerous other geobotanical publications has written a fascinating introduction, while his Notes to the Plates are gems of botanical knowledge. He makes crystal clear the interconnection between Alpine flora, Alpine climate, Alpine soils, Alpine fauna and Alpine folk. We see what an inestimable advantage it is to Switzerland that through the contrast between the plain and the high mountain ranges, it affords within a small area the means of traversing all types of European vegetation from the Mediterranean to that of the Arctic. The too-few pages of the introduction take us on an unforgettable journey from the banks of Lake Maggiore, with its olives, cypresses, orange and pomegranate trees up through mid-European beech-woods, pine and larch forests, Alpine pastures gay with blossoms and surrounded by a wealth of Arctic plant types, up to the peaks of Pizzo Centrale (circa ninety-eight hundred feet), whose vegetation is that of Spitsbergen and Greenland. We are shown how plant life gradually dies upwards from the forest zone as one mounts through the "battle" zone where trees struggle against the hostile might of the mountain climate, the shrub zone and the zones of meadow, pioneer pasture, pulvinate (i.e. cushioned) plants and lichens. One must resist here the temptation to quote further from Dr. Schroeter. His descriptions are no less full of the radiance and colours of his beloved Alps than the exquisite plates. Like the old herbals, this is a book "for use and for delight".

FLORENCE E. FORSEY.

*Structure, Surface and Drainage in Southeast England*, by S. W. WOOLDRIDGE and D. L. LINTON. (Publication No. 10 of The Institute of British Geographers, Geo. Philip and Son, Limited, London).

This book of 124 pages is an essay covering studies by the authors on the geomorphology of southeastern England. The detail with which the subject is treated is characteristic of the modern school of geomorphology whose object it is to provide a complete history of the topographical features of the area being studied. The book is illustrated with 28 maps and descriptive drawings and is noteworthy not only as a study of the area which it describes but as an example of the attention which

is now being given to the subject both by geographers and geologists.

Dr. Wooldridge is very well known as the co-author of "The Physical Basis of Geography" one of the best books on the subject now available and Dr. Linton occupies the chair of Geography at the University of Edinburgh. The book represents a contribution to physical geography which will be appreciated by every serious student of the subject.

*Geomorphology* by Professor A. K. LOBECK. (McGraw-Hill Book Company, New York and London. Price \$4.50).

To those who are interested in any phase of geography the past few years have brought a number of excellent books dealing with the subject of geomorphology, the study and interpretation of the landscape. Formerly this subject was, perhaps, considered too trivial for the serious consideration of the geologist, and any references to it in geological texts were buried in a mass of other material and generally couched in language of so technical a character as to be beyond the comprehension of the geographically minded layman. The new school of writers on geomorphology have presented their subject as far as possible in non-technical language, and have attempted to indicate in broad terms the history and origin of the land forms commonly seen. In so doing they have opened an entrancing field of study both to the geographer and the general reader, and have laid the foundation of a better appreciation of the physical surroundings which so greatly affect the activities of humanity.

Professor Lobeck's book was written as a text book, but its use should by no means be confined to the class-room. The subject is handled throughout with the greatest clarity and ease. The text is largely descriptive of the drawings, diagrams, and illustrations which are perhaps the most important feature of the book, and is so arranged that the description of a drawing will always be found on the opposite page, making for ease in reading and study. The illustrations are superb and the author has in many cases used air photographs, an innovation long overdue in books of this character. The book is heartily recommended both to the student and the general reader who has an intelligent interest in the marvels of the world of nature.

*Deserts* by GAYLE PICKWELL. (McGraw-Hill Book Co. and George J. McLeod, Limited, Toronto. \$4.25).

The deserts of South-western United States present scenery and types of flora and fauna entirely different from those of more temperate and well watered regions. In this book Dr. Pickwell presents a brief study of the physiographical features of desert lands and of the weird representatives of the vegetable and animal kingdoms which there have their habitat. The motor car and the facilities it provides for long distance touring have made these American deserts readily accessible to Canadians, and Dr. Pickwell's book is a delightful introduction to a section of the continent which is entirely unique, both in scenery and in the strange forms in which nature presents itself.

The title 'Deserts' is perhaps almost too comprehensive for the subjects treated, since it deals only with American deserts which differentiate widely, both in the causes of aridity and in physiographical form from desert lands in other continents. Exception might be taken to the author's attempt to classify as deserts, on the strength of certain analogies.

gies in types of vegetation, areas of sand dunes, salt marshes, and even the higher latitudes where all types of vegetable life are dormant and frost bound during the winter. The book is splendidly illustrated with over sixty original photographs. The text is very largely descriptive of the photographs, the arrangement being somewhat similar to that of various magazines dealing with geographical subjects. Dr. Pickwell has evidently been enthralled with those desert regions and has the happy faculty in passing on to the reader his interest in the strange forms of life which are found only in these arid plains and mountains.

The book concludes with a summarized chapter on deserts, and desert phenomena, and has a small bibliography dealing with American deserts and an adequate index. It is heartily recommended as an introduction to the deserts of Western America.

P. E. P.

#### FISH EXPORTS GAIN

Canada's exports of fisheries products showed a gain of more than \$900,000 during the first five months of the current year, when the value of shipments totalled \$10,486,000 compared with \$9,581,000 in the corresponding period of 1938. Gains were recorded in every month except March.

Shipments to the United States during the five-month period totalled \$5,317,000, a gain of about \$299,000, while the United Kingdom absorbed fisheries products to the value of \$2,156,000, an increase of about \$577,000 over the same period a year ago. Aggregate exports to other countries, amounting to approximately \$3,012,000, showed a gain of about \$28,500.

The growth of exports was more or less evenly distributed with fresh and frozen fish and canned products leading. An increase of about \$200,000 was shown in the fresh and frozen fish, and a gain of about \$425,000 in canned fish. Other classes of fisheries products recording increased export business included salted, dried, pickled, and other fishery products, as well as fish, seal and whale oils.

#### CIVIL AVIATION GAINS

Civil aviation continued to advance in Canada during 1938, when the number of flights made by commercial and all other aircraft totalled 205,175, an increase of 14,772 over the previous year. The mileage flown during 1938 was 11,652,421, an increase of 896,897 miles, and there were 10,611 student pilots carried, 19,965 student passengers, and 101,594 paying passengers. The amount of freight carried by air was 21,474,691 pounds and the mail carried amounted to 1,900,309 pounds. While the amount of freight was considerably less than in the two previous years, the amount of mail carried was much heavier. During 1938 twenty-three light aeroplane clubs with 1,240 flying members were in operation throughout the Dominion.

The principal activity of commercial aircraft in Canada during the year was the carriage by air of freight, passengers and mail to the more remote parts of the country. The freight consisted largely of machinery and supplies for mines in the northern regions of Quebec, Ontario, the western provinces, and the Northwest Territories. Formerly accessible only by dog team or canoe, many promising mining areas in the North are now served by aircraft operating on regular schedules. Other activities of

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commercial airmen included forest fire patrols, timber cruising, and air photography. Aeroplanes are now also used extensively for topographical survey work in Canada.

Canada has been one of the pioneers in freighting by air, and the recent inauguration of Trans-Canada Air Lines reflects the advances that are being made in air passenger traffic.

#### ASBESTOS PRODUCTION GAINS

Asbestos production in Canada registered an increase during the first five months of 1939, when the output totalled 116,019 tons compared with 106,952 tons in the corresponding period of last year.

Canada is the world's leading producer of asbestos, and, notwithstanding the growth of the asbestos mining industry in Russia, Rhodesia, and the Union of South Africa, the Canadian industry continues to hold its own in the world markets, having supplied more than 60 per cent of the world's production in 1937, according to the Department of Mines and Resources, Ottawa. Exports of asbestos from Canada during the month of May were recorded at 24,744 tons, of which approximately 71 per cent went to the United States, 13.9 per cent to Great Britain, 4.4 per cent to Japan, 4.1 per cent to Australia, and the remainder to Chile, Argentina, Italy, Poland and Danzig, New Zealand, Ireland, Siam, Belgium, Ceylon, and Brazil.

Canada's asbestos production comes entirely from large deposits of chrysotile in the Eastern Townships of Quebec. Chrysotile is the chief spinning fibre variety of asbestos, and the Canadian product, because of its superior qualities, including softness, silkiness, and tensile strength, is in active

demand for all kinds of asbestos products and for textiles. Although production from the Thetford Mines district has been continuous since 1878, the reserves of milling grade asbestos rock are reported sufficient for many years to come.

#### WORLD'S PRINCIPAL SOURCE OF NICKEL

Canada furnishes about ninety per cent of the world's annual production of nickel, according to the Department of Mines and Resources, Ottawa.

With the exception of small quantities recovered from the silver-cobalt ores of Northern Ontario, the entire Canadian output of nickel comes from the nickel-copper deposits of the Sudbury area, also of Northern Ontario. Other deposits of nickel-bearing minerals are known to occur in Northern and Northwestern Ontario, New Brunswick, Manitoba, British Columbia, and on the west coast of Hudson Bay in the Northwest Territories.

The operations of the Sudbury area are divided between two corporations, much the larger of which is the International Nickel Company, which works several mines, treats the ores in its own smelter in the area, and produces refined nickel in the company's refinery at Port Colborne, Ontario. The other company, Falconbridge Nickel Mines, Limited, produces nickel-copper matte from its own mine and smelter near Sudbury, but exports the matte to Norway for refining.

Canada's nickel production in 1938 amounted to 105,337 tons, or 6.3 per cent below the all-time peak of 1937. The latter was, however, more than double the pre-depression peak of 1929, indicating the rapidly increasing use of the metal in recent years, largely for the production of nickel steels, nickel cast-iron, and nickel-copper and nickel-silver alloys.

#### GYPSUM PRODUCTION GAINS

Reflecting an increased demand in export markets, gypsum production in Canada during the first four months of 1939 totalled 104,398 tons compared with 68,158 tons in the corresponding period of 1938, an increase of more than 50 per cent.

Canada ranks fifth among the world's gypsum producers, according to the Department of Mines and Resources, Ottawa. The materials produced in the Dominion are the hydrous calcium sulphate, commonly known as gypsum, the partly dehydrated material known as plaster of Paris or wall plaster, and the anhydrous calcium sulphate known as anhydrite. Nova Scotia is the chief gypsum producing province, accounting for 86 per cent of the Dominion's total production of 1,019,188 tons in 1938. Other producing provinces include Ontario, New Brunswick, Manitoba and British Columbia.

Canada exports about 80 per cent of her total production, mostly to the United States and Great Britain. The deposits in the Maritime Provinces are conveniently situated near tidewater, and thus enjoy exceptional advantages with respect to export markets, which absorb almost entirely the output of gypsum in the crude lump form, whereas disposal in the home markets is almost wholly as manufactured products.

The use of gypsum products in the building trades has made marked progress because of their lightness, durability, fire-resisting, insulating and acoustic properties; and tiles, wall-boards, blocks, and special insulating and acoustic plasters have been developed.

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